

2007 North Dakota State University Combined Research and Extension Annual Report

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I. Report Overview

1. Executive Summary

Although agriculture and rural communities will face serious challenges in the coming years, agriculture will remain an important underpinning of North Dakota's economy. The North Dakota Agricultural Experiment Station and NDSU Extension Service are leaders in researching new economic opportunities and providing educational and other services that citizens need to take advantage of.

Changing climate conditions, pests and prices make crop production a challenge. In addressing these challenges, NDSU specialists and researchers help the state's producers find ways to improve the profitability and sustainability of crop production.

In 2007, North Dakota led the nation in production of spring wheat, durum wheat, all wheat, barley, oats, canola, all sunflower, oil sunflower, non-oil sunflower, flaxseed, all dry edible beans, pinto beans, navy beans, dry edible peas, lentils, and honey. The state ranks third in sugarbeets; fourth in potatoes; and ninth in soybeans. The total value of the 2007 crop production in North Dakota is estimated at \$6.46 billion, the highest value for state crop production on record. A short growing season and low rainfall limits diversification, yields and cropping potential. Still, North Dakota is one of the most agriculturally diverse states in the nation with more than 40 different crops grown.

NDSU researchers continue to develop genetically improved varieties of major crops. Teams of breeders, pathologists, cereal chemists and entomologists work together to develop improved cultivars including wheat breeders and pathologists working together to develop cultivars resistant to Fusarium head blight (FHB); barley breeder and pathologist working together to develop cultivars resistant to FHB; soybean breeder and pathologist working together to develop cultivars resistant to soybean cyst nematode; potato breeder and pathologists working together to develop cultivars resistant to multiple pathogens; and barley breeder and cereal chemist working together to develop cultivars with improved resistance to pre-harvest sprouting. Those varieties possess improved agronomic performance and quality and have a major economic impact on the state and region through increased yield, improved disease resistance and quality and improved access to markets. Value of released new varieties to North Dakota is estimated \$2,906,000,000. Faller Wheat - \$250,000,000; Lariat and Stampede pinto bean - \$17,600,000; Sheyenne non-transgenic soybean - \$4,500,000; RG7008RR soybean - \$1,000,000; and Pinnacle two-rowed barley - \$17,500,000.

Germplasm, including new cultivars, has been shared with public and private breeders, both domestically and internationally including soybean germplasm with three private companies in the U.S.; corn germplasm shared with 11 private companies and 18 public breeders; wheat germplasm with Hessian fly resistance shared with public breeders; dry bean germplasm shared with public breeders in NE, CO, MI, and USDA-ARS; and durum wheat germplasm shared with two domestic private breeders and one international private breeder.

Fusarium head blight (FHB) is the major fungal disease in the spring wheat region, with the disease causing grain shriveling and losses due to the DON mycotoxin. The release of publicly developed resistant varieties and their adoption by North Dakota has saved growers millions of dollars. In 2007, ND wheat producers increased acreage of resistant wheat varieties by 43%, including Glenn wheat, which was the most widely-grown variety in the state. ND producers know that experiments performed at NDSU showed efficacy of fungicide applications for reducing disease severity, yield losses, and quality losses. In 2007, fungicides were applied to approximately 1 million acres. Depending on variety treated, yield increased 20 – 30%, DON decreased up to 50%, and severity decreased approximately 20 – 60%. Economic losses in North Dakota were reduced through use of better varieties (approximately \$20 million increase in wheat value statewide) and through use of fungicides (also approximately \$20 million statewide).

Weed control is a big part of our scientist's work to improve crop management. Research trials identify the acceptable amounts, application timing and safety of products. 25,000 weed control guides are published annually and none are left by the end of the year. Producers heed the recommendations of the weed control guide and improve the competitiveness of their crops against weeds.

Each year, insect pests are present throughout North Dakota. The NDSU Extension's Integrated Pest Management (IPM) survey program and applied research programs provide real-time insect pest information and updates on new research of important insect pests. IPM Survey information provides real-time data using GPS-maps to display the presence /absence and population levels of the major insect pests of ND. This information is posted weekly on the NDSU IPM website and assists ND producers, crop consultants and extension agents in making crucial pest management decisions. Data verifies the absence of pests, like cereal leaf beetle, that are of export concern. Thousands of insect identifications were conducted through NDSU Extension Entomology. Proper insect identification is key to knowing how to control any insect pest. The diagnostic effort provides accurate insect identifications to many different audience groups. In turn, this has resulted in the diagnostician providing the proper pest management information based on the "correct" insect identification.

In 2007, programs focusing on site-specific management totaled 1,000 attendees at various presentations around North Dakota. Growers benefit from the use of precision technologies, tillage improvements and nutrient management changes. New

research in dry bean and canola showed lower N rates are appropriate. An estimated 1000 dry bean, canola growers used lower rates of N in 2007 than previously. Use of N credits for previous crops (sugar beet tops and legumes) is underused. An estimated 500 additional growers either use crop credits or use greater amounts than recently published. A reduction of N rates with no crop yield or quality consequences increases grower profits. An estimated 500,000 acres had a 20 lbs/ac reduced N rate. At \$.40/lb of N, grower's advantage was \$4,000,000.

Soil testing helps farmers manage nutrient inputs. Cost of nutrients in 2007 was 50-100% higher than previous years, which resulted in increased farmer interest and participation in soil testing. Soil testing has been and continues to be a part of all crop nutrient training. This training is provided to about 2,000 farmers annually. Over 300 additional farmers used soil testing in 2007. Soil test analysis numbers were up about 10%.

No-till is a low-fuel alternative to other tillage systems that increase soil residue cover. A series of meetings for farmers was provided that included no-till systems and the associated fuel savings. Approximately 50 new growers have adopted no-till strategies. Reduced tillage decreases fuel use and increases soil conservation and future crop production potential. An additional 5% of crop acres (1,000,000 acres) in North Dakota were in some kind of reduced tillage compared to previous years. Approximately 250 new farmers used reduced energy technologies, including RTK GPS and reduced tillage systems.

The biofuel industry in North Dakota is expanding rapidly. Source of products is critical and production must be maintained at high levels for industry to succeed. Over 500 farmers attended corn, canola and soybean meetings and trainings that covered production issues, including ethanol/biodiesel end-use. A canola biodiesel plant became operational in Velva, North Dakota in 2007; however, there may not be enough canola seed in the region to sustain operation of this plant over coming years. A canola breeding program was initiated in 2006 to develop canola varieties which yield higher oil per acre. Samples from approximately 3500 plots were tested in the fall 2007 for oil content and other properties that contribute to the value of the oil for biodiesel use. Results were used by an NDSU canola breeder to select varieties for production at winter nursery sites in Chile, to be tested at NDSU in spring 2008. Grant dollars received for proposals related to biofuels exceeded 1.1 million dollars in 2007. Funding was received for biodiesel co-product development and for a feasibility study for a large dairy and anaerobic digester co-located at an existing corn ethanol plant.

Livestock production is big business in North Dakota, accounting for nearly 21 percent of total agricultural cash receipt. Livestock production is the original value added enterprise adding value to the state's abundant crop forage and rangeland resources. More than 44 percent of North Dakota's land use is associated with rangeland, pasture land and hayland. NDSU programs help producers cut costs, boost returns and fund new opportunities.

Beef cattle producers face increasing feed costs in light of increased demand worldwide for cereal grains. Even though limited amounts of corn are fed to beef cows, the prices of all other feed ingredients, including forages, have increased dramatically in response to increased demand for cereal grains. Therefore, it is imperative that beef producers understand proper beef cattle nutrition in order to reduce costs and remain profitable. In 2007, 18 workshops were conducted that related to beef cattle nutrition or feed costs. A total of 723 beef cattle producers, feed industry personnel, veterinarians, and agency employees attended these workshops. Records from the ND Farm Business Management Association for North Dakota beef cattle operations indicate that cost of production has increased due to inflationary pressures on feed and energy costs.

Numerous federal and state government agencies have provided incentives through government cost-sharing programs. Livestock producers are interesting in learning and using these incentive programs and matching dollars to improve their range management practices and livestock production per given land base. Sixteen educational programs were conducted in collaboration with the Natural Resources Conservation Service and North Dakota State University Extension Service for private land managers. Over 600 livestock producers participated in these workshops and training sessions and over 30 landowners are known to have participated and incorporated cost-sharing programs.

Noxious and invasive weeds have a direct economic and ecological impact on range and pastureland. These weeds reduced forage production, thus livestock production potential, resulting in an economic drain to the livestock sector. Ecologically, noxious and invasive weeds reduce the integrity of the natural resource, reducing the soil and plant community value for health, esthetics, and wildlife habitat. Intensive training sessions and workshops were held for livestock producers and land managers to enhance the knowledge of weed management and plant identification. These events impacted 509 individuals with an estimated 35,450 acres reached.

The average cost for controlling weeds is approximately \$12/ac using traditional techniques, thus creating a cost return at and above these costs of a minimum of \$3. Ten educational opportunities provided options for controlling and managing noxious and invasive weeds that provided a net gain in return from the livestock sector above the input costs of a minimum of \$3 and as great as \$20. Surveys by the North Dakota Agriculture Department show a continued reduction of noxious weeds by at least 2%, and as much as 4%.

Agricultural pollution primarily from non-irrigated cropland, grazing land and feedlots presents a significant threat to North Dakota's surface waters. According to the North Dakota Department of Health, 58 percent of the state's assessed river and stream miles and about 56 percent of the assessed lakes and reservoirs are either threatened or impaired for aquatic life use. Livestock waste has been identified as an important source of pollutants. The NDSU Extension Livestock Waste Technical Information and Assistance program addresses manure nutrient utilization, livestock feeding, housing, and management impacts on livestock waste and defines and delineates the non-point pollution rules and the economics of proper livestock waste management. Livestock producers who are impacting waters of the state must implement management practices or facility upgrades to minimize environmental impact. Individual consultation with producers was conducted to share with them the options

they have for reducing their environmental impact. Thirty-five individuals obtained an animal feeding operation from the ND Dept Health by installing facility upgrades to control runoff that impacted waters of the state and three individuals did not need a permit since they instituted management changes that removed them from consideration for a permit.

Livestock and crop producers who use livestock manure as a fertilizer need to have a nutrient management plan to ensure proper utilization of the manure. Consultants who work with producers to write nutrient management plans attended group trainings to learn about writing nutrient management plans. Thirty NRCS employees and several private consultants can now write nutrient management plans.

There is an increased awareness of food safety issues in North Dakota and the country. Large-scale food production and marketing systems and food prepared in institutional or restaurant settings have the potential for large-scale outbreaks of foodborne illness. An increasing number of foodborne illnesses are being linked to produce in the U.S. Food recalls are consistently in the media. Safe refrigeration temperatures and cooling practices are an issue in households across the United States, with refrigeration temperatures not meeting the recommended 40 degrees Fahrenheit or lower. From 2005-07, two national campaigns were being implemented in North Dakota: the "Fight BAC" and the "BAC Down" campaigns through our statewide nutrition and food safety education programs. To promote these campaigns, lesson plans, displays and games were developed, and training sessions were held with staff across North Dakota. The produce safety campaign was evaluated with pre/post testing. On the pre-survey, about 26 percent reported "always" rinsing produce under running water before eating; on the follow-up survey, 42 percent reported "always" rinsing produce. On the pre-survey, 72 percent reported "always" separating their fruits and vegetables from household chemicals and raw food, compared to 80 percent on the post-survey. On the pre-survey, 51 percent reported "always" cooking or throwing away fruits or vegetables that have touched raw meat, poultry, seafood or their juices, compared to 71 percent on the follow-up survey. On the pre-survey, about 39 percent of participants reported "always" chilling cut produce within two hours compared to 52 percent on the post-survey.

Increases in daycare, hospital and nursing home populations as well as a growth in restaurant and deli businesses means a growing portion of the population is at risk from outbreaks of foodborne illness. In addition, quantity food preparation presents unique challenges for safe food handling and preparation. In this environment, more attention has been placed on the development and implementation of safe food handling guidelines. ServSafe Food Safety Certification and HACCP training programs have been conducted for foodservice managers and for members of the food industry. About 86 percent of students taking the ServSafe exam have passed the national exam. On post-surveys administered to the students, they indicated they will do the following "more often" as a result of the class. About 96 percent will train others about the importance of handwashing, and 91 percent plan to wash their hands more often when preparing food. About 98 percent will apply what they learned at home. Participants reported that they will train 2,243 workers.

According to the Centers for Disease Control and Prevention (CDC), hand washing is the single most important means of preventing the spread of disease. Studies in schools and childcare centers have shown links between improper or infrequent hand washing and colds, flu and foodborne illness outbreaks. Initiated in 2002, the "Wash Your Hands" project has reached more than 10,000 children in grades K-12 in schools throughout North Dakota. According to post-surveys with students, about 92 percent said they would wash their hands more often, and 90 percent said they would wash their hands more carefully. About 86 percent of teachers reported that they talk about handwashing to students, and 71 percent reported that their students wash their hands more often during school time.

"Teens Serving Food Safely" is a statewide NDSU Extension Service food safety education effort designed to improve young food handlers' food safety knowledge and skills and decrease risk of foodborne illness outbreaks associated with food service establishments. According to a 2000 U.S. Department of Labor report, 32% of employed 15- to 17- year olds work in eating and drinking establishments. The pilot-tested "Teens" curriculum consists of five lessons based on the Fight BAC™ and Thermo™ national food safety campaign concepts, with pre/post and follow-up evaluation procedures. Knowledge scores, as measured by pre/post testing, increased from 54 percent correct on the pre-test to 87 percent on the post-test. About 62 percent of participants had been involved in food preparation for the public.

Diet and physical activity behaviors are related to the development of obesity and the risk for several chronic diseases such as heart disease, cancer, type 2 diabetes, and osteoporosis. These health conditions cost society an estimated \$200 billion a year in medical expenses and lost productivity. Despite strong evidence supporting the health benefits of a healthy lifestyle, Americans, including North Dakotans, do not meet national nutrition and health goals. Walk North Dakota is a statewide eight-week walking program for adults and youth that uses an interactive Web site for data collection and assessment of miles walked. In FY 2007, 720 participants in the Walk North Dakota program walked 296 million steps (148,000 miles) based on results of a Web-based data collection system. According to post-surveys, about 83% of participants reported using pedometers as tools to monitor daily steps; of those, 80% reported an increase in overall activity based on step counts. Dining with Diabetes also implements a walking program for its participants. In the Dining with Diabetes program, participants reported an increase in their exercise scores, from 5.77 ± 2.22 to 6.68 ± 2.25 .

Cardiovascular disease is the leading cause of death in North Dakota. Proper nutrition and regular physical activity are two ways to reduce the risk of cardiovascular disease and other illnesses. According to results of a North Dakota Department of Health survey, only 18 percent of North Dakota adults eat five servings of fruits and vegetables per day and 34 percent of North Dakotans are completely physically inactive outside of work. Dietary intake that follows recommendations is associated with reduced risk of disease and nutritional deficiencies. Lessons and other educational materials based on MyPyramid were created/adapted and disseminated through our Web site (www.ag.ndsu.edu) and through the Healthy North Dakota

community-based program, which encourages participants to eat more fruits and vegetables each day and to get 30 minutes of moderate physical activity five or more days of the week. A complementary program, Dining with Diabetes, targets people with diabetes or at risk of diabetes. According to results of the Dining with Diabetes Program, participants ate a more healthful diet, as shown by dietary quality scores, which increased from 29.51 ± 11.6 to 35.2 ± 8.43 . In a MyPyramid-based lesson ("Cooking for One or Two"), 26 percent of participants planned to use MyPyramid guidelines to plan their menu, 38 percent planned to eat a wider variety of foods and 83 percent planned to share the information with others. In programming with limited resource audiences, 52 percent indicated sometimes choose fruits/vegetables as snacks, 97 percent indicated an intention to choose fruits and vegetables as snacks, and 95 percent indicated an intention to make physical activity a regular part of their day.

Childhood and adult obesity remain issues of concern in the U.S. Many children are considered overfed but under-nourished. Two curricula for youth ("Banking on Strong Bones" and "On the Move to Better Health"), as well as a statewide "Eat Smart. Play Hard. Together" program have been implemented with parent education components and evaluation. On the parent pre-survey in the "Banking on Strong Bones" curriculum, about 40 percent of households offered soda pop as a beverage of choice, compared to 36 percent on the post-survey. About 56 percent of parents reported positive changes in their child's eating habits as a result of this program. On the post-survey, about 71 percent reported eating meals together as a family five or more times per week. In the "On the Move" program, 60 percent of parents reported an increase in their families' consumption of fruits and vegetables, and 44 percent reported an increase in consumption of dairy products.

According to USDA, 70 percent of pre-teen girls and 60 percent of pre-teen boys do not meet daily calcium recommendations. Two curricula are being implemented in North Dakota. "Banking on Strong Bones" is a five-week, school-based educational intervention for fourth graders, with instruction by NDSU Extension Service Agents/Assistants. The purpose is to increase knowledge/awareness of the role calcium-rich foods and weight-bearing activities play in building and maintaining strong bones among children and to improve food and beverage choices. "On the Move to Better Health" is a curriculum for fifth graders, which includes education about MyPyramid and aims to increase fruits, vegetables and calcium-rich foods in the diets of children. In addition, a "Healthy North Dakota 4-H Club" recognition program has been implemented to increase awareness and implementation of MyPyramid guidelines at the organization level. Students improved their knowledge scores and reported positive attitude and behavior changes toward consumption of dairy products. On the pre-survey, 47 percent reported drinking three or more glasses of milk the previous day, compared to 68 percent on the post-survey. On the pre-survey, 17 percent reported drinking soda pop every day, compared to 13 percent on the post-survey. On the pre-survey, 39 percent of children indicated they would choose soda pop over milk if given the choice; on the post-survey 28 percent would choose soda pop over milk if given the choice. About 56 percent of parents reported positive changes in their child's eating habits as a result of this program. In "On the Move to Better Health" lessons at the end of five weeks, 82 percent reported meeting the goals they set at the beginning of the lesson, 53 percent of children reported increasing the amount of fruits and vegetables they consumed, 63 percent reported drinking more milk, 72 percent reported drinking less soda pop, 67 percent reported drinking more water, and 61 percent increased the amount of physical activity they did. In 4-H youth programming, about 200 youth were recognized in 4-H Clubs for participating in at least six "healthy activities" based on MyPyramid guidelines.

Parents and other adults need increased knowledge on key issues related to family meals. An educational lesson was developed on the value and importance of family meals and presented across the state to 1,350 participants. Ninety-two percent of participants in the educational program indicated they had learned something new on key issues related to family meals. Ninety-one percent of participants in the educational program indicated they were implementing specific steps related to healthy practices and family meals. Ninety-three percent of participants in the educational program indicated they were developing new ideas and skills regarding family meal practices in the home.

A funeral is one of the most expensive purchases a consumer will ever make. A traditional funeral, including a casket & vault costs plus extras today can run over \$10,000. Pre planning can save not only money, but reduce the stress on family members. A packaged program, Final Wishes, was taught to educators and shared with community groups. A funeral director indicated 13 people have come in to plan their funeral since the 3 "Final Wishes" lessons. He feels that people are more willing to talk about the funeral since the lesson.

Community leadership is as important as good roads, great schools and clean water. Leadership is required in communities to make sure things run smoothly and make them a better place to live, work and raise families. Strengthening leadership in communities is critical and the NDSU Extension Service has two long-term programs to assist in this leadership development for North Dakotans; Horizons and Rural Leadership North Dakota.

Twenty-one communities participated in the Horizons program that works to develop local leaders to address difficult local issues such as poverty and demographic decline. Each community involved in the program was required to have at least 25 individuals go through a Leadership Plenty curriculum; a nine module program covering leadership skills and issues including communication, conflict resolution, partnering and making meetings work. A total of 622 North Dakotans participated in portions of the Leadership Plenty training. Pre and post survey results indicate a statistically significant change in knowledge and behaviors of participants around issues related to leadership skills. Of the 622 North Dakotans who participated in this program, 522 completed the pre and post surveys. Within the survey two questions specifically addressed the participant's understanding of how they could be involved in leadership roles and included; (1) I recognize the relationship between getting involved and civic leadership (pre – 3.6, post – 4.3 on a 1-5 scale) and (2) I am able to work with the leadership in my organization and/or greater community (pre-3.7, post 4.2 on a 1-5 scale).

Rural Leadership North Dakota is a two year interactive study and travel program dedicated to producing graduates with the

vision and commitment to lead themselves, their organizations and communities into the future. During October 2006-2007, participants attended five, three-day seminars across North Dakota. Leadership skills and knowledge among RLND participants increased 33%. A RLND summary booklet was prepared that describes the 17 RLND community projects.

Youth leadership and involvement is critical to the state's future. Without the next generation stepping up to leadership roles, communities will face a void in leadership to tackle difficult issues and projects. Youth were recruited to be involved in Study Circles and Leadership Plenty within the Horizons program. During Study Circles, out of 101 youth involved, eight led study circles dialogue over the six meeting format.

Developing skills to prepare youth for the workforce is one of the underlying goals of many 4-H activities. Contribution to communities is important to 4-H clubs/groups. 59 of 67 respondents (88 %) identified community service as part of their goals and purpose. 94 % of the respondents said they were concerned about local issues. Comments on "learning" through contribution highlighted some common themes: 1) the joy of giving, 2) the importance of organizational skills and cooperation, 3) respect for the environment, 4) appreciating the elderly, and 5) empathy for others. 66 of 67 (98 %) of respondents said the 4-H clubs could have a positive impact in their community. 507 adults and 209 youth participated in leadership training and provided leadership to their clubs/groups citizenship activities.

With focus on organizational and identifying needs, 63 of 69 respondents agreed they have a good understanding of the needs in their communities. Training in leadership skills combined with taking responsibility to address needs in the community is demonstrated with community service projects by 75 of the 79 clubs reporting (16 % of organized 4-H clubs).

Total Actual Amount of professional FTEs/SYs for this State

Year:2007	Extension		Research	
	1862	1890	1862	1890
Plan	175.0	0.0	454.0	0.0
Actual	85.0	0.0	50.0	0.0

II. Merit Review Process

1. The Merit Review Process that was Employed for this year

- Internal University Panel
- External University Panel
- Combined External and Internal University Panel
- Expert Peer Review

2. Brief Explanation

Extension program leaders from North Dakota and South Dakota met to develop joint program opportunities for sustainable agriculture programming. Program leaders from the entire North Central Region met twice and exchanged ideas on plans of work in agriculture and natural resources, family and consumer science, 4 H youth development, and community resource development.

Research programs were subjected to reviews prior to, during and at the conclusion of each research project. Research faculty who participate in multi state research projects received a critical review of their contributing project from fellow committee members, the administrative adviser and the North Central Multi State Research Committee. Most faculty have competitive grants which are awarded on the basis of scientific merit and have an external peer review. Each research faculty member with the North Dakota Agricultural Experiment Station was required to have a station project that was reviewed for scientific merit by a Project Review Committee that is comprised of one faculty member from each discipline. All research was peer reviewed, either internally or externally, prior to publication.

III. Stakeholder Input

1. Actions taken to seek stakeholder input that encouraged their participation

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey specifically with non-traditional groups

Brief Explanation

Establishing linkages with the public enables us to discover information about community/county/district/state assets and needs. Methods such as holding public meetings or listening sessions, using targeted invitations, and surveys are used for stakeholder input on an on going basis. Using several methods to collect data ensure that high priority issues are identified, people that have a self interest in the issue are brought to the planning meetings, and an educational design is developed to address the issue using a variety of delivery methods.

2(A). A brief statement of the process that was used by the recipient institution to identify individuals and groups stakeholders and to collect input from them**1. Method to identify individuals and groups**

- Use Advisory Committees
- Use Internal Focus Groups
- Use External Focus Groups
- Open Listening Sessions
- Needs Assessments
- Use Surveys

Brief Explanation

The State Board for Agricultural Research and Education (SBARE) is charged with determining the causes of any adverse economic impacts on crops and livestock produced in this state; developing ongoing strategies for the provision of research solutions to negate adverse economic impacts on crops and livestock produced in this state; developing ongoing strategies for the dissemination of research information through the Extension Service; annually evaluating the results of research and extension activities and expenditures; and reporting the findings to the North Dakota Legislative Council and the State Board of Higher Education.

County commissioners actively participate in county extension program reviews. The county extension budgeting process also results in strong engagement from county government.

The North Dakota Department of Human Services and NDSU Extension Service formed a statewide Family Life Education Committee. The committee is composed of state legislators, an Extension specialist, an Extension Human Development Agent, citizens with a parenting self interest, two administrators from the Child Division of the State Department of Human Services and the Extension Assistant Director, Nutrition, Youth and Family Science. As a result of this partnership, the state Department of Human Services provides funding opportunities to six state family life education centers through a request for proposal process. The availability of designated funds also directs the focus of the parenting education programs provided through the six family life education center coordinators.

The ND Department of Health, under the direction of the Governor of North Dakota, formed an alliance of organizations in ND that provide significant support and leadership for health related initiatives. NDSU Extension is represented on this coalition. Networking among these professionals is invaluable, in addition to the legislative work.

A number of government and non governmental units have formed a coalition to address the financial needs of North Dakotans. Saving more and reducing credit card debt are two of the key issues being addressed. NDSU Extension is a part of the team.

2(B). A brief statement of the process that was used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them**1. Methods for collecting Stakeholder Input**

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals

Brief Explanation

The State Board for Agricultural Research and Education (SBARE) meets bimonthly. Both the Extension Service and the Experiment Station are represented on the board, affording opportunities for input and program directions.

County commissioners are met with at least once a year and in most cases twice for input.

The statewide Family Life Education Committee meets quarterly where input is sought for programming and direction.

3. A statement of how the input was considered

- In the Budget Process
- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Action Plans
- To Set Priorities

Brief Explanation

The State Board for Agricultural Research and Education (SBARE) is charged with developing ongoing strategies for the dissemination of research information through the extension service; annually evaluating the results of research and extension activities and expenditures; and reporting the findings to the North Dakota Legislative Council and the State Board of Higher Education. Their findings directly affect the budgeting process.

The staff from the seven research extension centers (RECs) uses the input from winter meetings with their advisory boards to set program direction for their center.

During county staff evaluations each year, programming input is gathered from commissioners who take part in the staff evaluations. This arrangement helps assure that extension programs are grass roots driven and are focused on local issues and needs.

The statewide Family Life Education Committee, composed of state legislators, an Extension specialist, an Extension Human Development Agent, citizens with a parenting self interest, two administrators from the Child Division of the State Department of Human Services and the Extension Assistant Director, Nutrition, Youth and Family Science determine the availability of designated funds which direct the focus of the parenting education programs provided through the six family life education center coordinators. The six family life education coordinators provide evaluation feedback to the Family Life Education Committee of the state Department of Human Services on program impacts. These impacts are then shared with state legislators which in turn affect budgeting.

Brief Explanation of what you learned from your Stakeholders

Focus our efforts in areas that affect the citizens of North Dakota and have an impact on the economy and well being of the state.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
3139269	0	4009560	0

2. Totaled Actual dollars from Planned Programs Inputs				
Extension			Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	2081800	0	1139000	0
Actual Matching	3122700	0	1675000	0
Actual All Other	0	0	0	0
Total Actual Expended	5204500	0	2814000	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous years				
Carryover	0	0	0	0

V. Planned Program Table of Content

S. NO.	PROGRAM NAME
1	Economics of Crop Production
2	Energy in Crop Agriculture
3	Plant Breeding
4	Weed Science
5	Soil Science
6	Biofuels
7	Insect Management
8	Center for Nutrition and Pregnancy
9	Nutrition of Grazing Livestock
10	Food Safety
11	Healthy Patterns of Eating & Physical Activity
12	Livestock Waste Management
13	Citizenship and Leadership Development
14	Developing Leadership Systems
15	Financial Security for All
16	Noxious and Invasive Weed Management
17	Fusarium head blight of wheat
18	Family Meals

Program #1

V(A). Planned Program (Summary)

1. Name of the Planned Program

Economics of Crop Production

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
601	Economics of Agricultural Production and Farm Management	25%		0%	
602	Business Management, Finance, and Taxation	25%		0%	
603	Market Economics	25%		0%	
604	Marketing and Distribution Practices	25%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	9.0	0.0	0.0	0.0
Actual	9.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
252000	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
378000	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

•Identify emerging issue. •Provide enterprise budgets, resource use alternatives, crop insurance options, marketing strategies and other resource material reflecting best management practices. •Evaluate effectiveness of alternative management practices. •Develop presentation materials. •Offer in-service education, presentations and workshops.

2. Brief description of the target audience

•Owners, managers and employees of farm operations •Marketing club members and facilitators •Agribusiness and government agency personnel

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	5000	500000	0	0
2007	5000	500000	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2007 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	15	1	16

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

Not reporting on this Output for this Annual Report

Year	Target	Actual
2007	{No Data Entered}	{No Data Entered}

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Number of producers and others attending workshops, marketing clubs and other events.
2	Number of participants demonstrating an increase in subject knowledge and skills.
3	Evidence of producers employing enterprise budgets, using computerized decision-making tools, writing marketing plans and adopting recommended management tools.
4	Number of marketing clubs in the state.
5	Evidence of producers having a more productive working relationship with agriculture service personnel.
6	Evidence of producers implementing activities indicated by the management tools.
7	Evidence of benefits from marketing club participation and best management practice implementation.
8	Estimated value of adopted best management practices to the individual and to the state.

Outcome #1**1. Outcome Measures**

Number of producers and others attending workshops, marketing clubs and other events.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	5000	5000

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Meetings will be provided.

What has been done

Numerous local, county, regional and state level meetings were held.

Results

Many producers were exposed to educational material.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices
602	Business Management, Finance, and Taxation
603	Market Economics

Outcome #2**1. Outcome Measures**

Number of participants demonstrating an increase in subject knowledge and skills.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	2500	2500

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Increase in subject knowledge and skills.

What has been done

Extension economists provided new, cutting-edge management and marketing information.

Results

The knowledge base of many agricultural producers was expanded.

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation
603	Market Economics
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #3**1. Outcome Measures**

Evidence of producers employing enterprise budgets, using computerized decision-making tools, writing marketing plans and adopting recommended management tools.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	15000	15000

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Enterprise budgets, computerized decision-making tools, and marketing plans are essential marketing tools.

What has been done

Examples of budgets, computerized decision-making tools and marketing plans were developed.

Results

Numerous North Dakota producers used these examples to develop farm specific budgets and marketing plans.

4. Associated Knowledge Areas

KA Code	Knowledge Area
603	Market Economics
604	Marketing and Distribution Practices
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation

Outcome #4**1. Outcome Measures**

Number of marketing clubs in the state.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	50	52

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Maintain at least 50 active marketing clubs in North Dakota.

What has been done

Two existing clubs decided to exit the program; however, four new clubs were started.

Results

A net gain of two clubs was realized and existing clubs were provided with information to continue their viability.

4. Associated Knowledge Areas

KA Code	Knowledge Area
603	Market Economics

Outcome #5

1. Outcome Measures

Evidence of producers having a more productive working relationship with agriculture service personnel.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	10000	10000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Producers need to work with agricultural service personnel.

What has been done

Several conferences with service personnel including ag lenders, crop insurance agents, marketing club facilitators, and tax practitioners were held.

Results

Both service personnel and producers acknowledged a greater understanding of the challenges of each other's businesses.

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation

Outcome #6

1. Outcome Measures

Evidence of producers implementing activities indicated by the management tools.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	7500	7500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Producers need to implement new management tools.

What has been done

Meetings to provide education on new management tools such as Quicken, QuickBooks, Fair Rent, and FAST Tools were held.

Results

Many producers implemented new management tools to aid in the multitude of decisions that must be made for the farm firm.

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation
601	Economics of Agricultural Production and Farm Management

Outcome #7

1. Outcome Measures

Evidence of benefits from marketing club participation and best management practice implementation.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	90000000	90000000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Monetary rewards from marketing club participation are needed to continue interest in club activities.

What has been done

Producers received educational material to implement pre- and post-harvest pricing strategies.

Results

Crops were priced at higher than harvest low prices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
603	Market Economics

Outcome #8**1. Outcome Measures**

Estimated value of adopted best management practices to the individual and to the state.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	90000000	90000000

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Crop production is an important income source for North Dakota.

What has been done

Educational activities which helped agricultural producers adopt best management practices was provided.

Results

The value of crop production increased significantly in 2007 due to both higher prices and producers adopting best management practices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
603	Market Economics

V(H). Planned Program (External Factors)**External factors which affected outcomes**

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Programmatic Challenges
- Other (Farmer attitudes)

Brief Explanation**V(I). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

- Retrospective (post program)
- During (during program)

Evaluation Results

Outlook Conference for Agricultural Lenders Evaluation Summary

My attendance at this event should prove (7 = very beneficial, 1 = no value):

Overall:205 responses, 5.91 average ranking

Overall, I consider this learning experience (7 = excellent, 1 = poor):

Overall:206 responses, 5.96 average ranking

Give an example of something you gained from this session which may help you in your operation:

- Marketing information on what to expect in 2008 and beyond
- Understanding of livestock marketing
- 2008 crop marketing strategies
- Discussion on flexible leases
- Marketing strategies for grain
- Crop planning price knowledge and beneficial cattle information regarding market trends
- Markets
- Market updates, update on financial standards, great information
- Increased farm input costs
- Projections of price of commodities will help to relate and give advice to customers
- 2008 crop prices and crop costs
- Costs/marketing – looking forward – help with producers
- Outlook on prices is always very useful. Comment on value of retained earnings as a measure of success.

Key Items of Evaluation

Program #2

V(A). Planned Program (Summary)

1. Name of the Planned Program

Energy in Crop Agriculture

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
205	Plant Management Systems	50%		0%	
402	Engineering Systems and Equipment	35%		0%	
404	Instrumentation and Control Systems	15%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	10.0	0.0	0.0	0.0
Actual	10.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
280000	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
420000	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Develop presentation materials and develop resource materials
- Develop and plan workshops, demonstrations and meetings
- Transcribe scientific research into useable resources
- Continuing education demonstrations - fuel use, tillage and N use
- Cooperate with NDSU Research Extension Centers - conduct rate N calibrations and tillage fuel use studies

2. Brief description of the target audience

- Extension staff
- Crop consultants
- Agricultural industry personnel
- Agricultural financial people
- Government workers

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	500	2000	0	0
2007	10000	50000	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2007 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	6	3	9

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

Not reporting on this Output for this Annual Report

Year	Target	Actual
2007	{No Data Entered}	{No Data Entered}

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Number of farmers gaining knowledge on new tillage options
2	Number of farmers gaining knowledge of energy alternatives
3	Number of farmers gaining knowledge of energy potential and availability of different crops
4	Number of farmers that changed their tillage habits to no-till
5	Number of farmers that make greater use of soil testing for fertilizer needs
6	Number of acres under reduced tillage
7	Number of farmers using reduced energy technologies

Outcome #1**1. Outcome Measures**

Number of farmers gaining knowledge on new tillage options

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	150	400

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Fuel costs have risen and farmers are interested in fuel conservation management options.

What has been done

A series of tillage workshops including a large strip tillage expo (with Univ. of MN in August, 2007) were organized and presented.

Results

Based on attendance of tillage seminars and the increase in knowledge noted in evaluations, 400 farmers gained knowledge of new tillage options for soil and fuel conservation.

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment
205	Plant Management Systems

Outcome #2**1. Outcome Measures**

Number of farmers gaining knowledge of energy alternatives

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	250	600

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Fuel costs are rising, partly due to imports and problems with refinery capacity and distribution in our mostly urban society. Biofuels decreases imports and helps in the interior fuel distribution, as well as enhancing rural farm economies.

What has been done

A series of meetings and trainings on biofuels(ethanol, biodiesel)support the emerging biofuel industries with science-based crop production and energy effectiveness research dissemination.

Results

Biofuel industry is growing. Approximately 600 farmers increased knowledge of biofuel manufacturing byproducts and use of biofuels

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment

Outcome #3**1. Outcome Measures**

Number of farmers gaining knowledge of energy potential and availability of different crops

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	250	500

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Biofuel industry is expanding rapidly. Source of products is critical and production must be maintained at high levels for industry to succeed.

What has been done

Series of corn, canola and soybean meetings and trainings were provided that covered production issues, including ethanol/biodiesel end-use.

Results

Over 500 farmers increased knowledge of energy potential of a number of potential crops.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

Outcome #4**1. Outcome Measures**

Number of farmers that changed their tillage habits to no-till

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	150	50

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

No-till is a low-fuel alternative to other tillage systems that increase soil residue cover. Less energy is required.

What has been done

A series of meetings for farmers was provided that included no-till systems and the associated fuel savings.

Results

Approximately 50 additional growers have adopted no-till strategies.

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment
205	Plant Management Systems

Outcome #5

1. Outcome Measures

Number of farmers that make greater use of soil testing for fertilizer needs

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	300	300

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Soil testing helps farmers manage nutrient inputs. Cost of nutrients in 2007 was 50-100% higher than previous years, which resulted in increased farmer interest and participation in soil testing.

What has been done

Soil testing has been and continues to be a part of all crop nutrient training. This training is provided to about 2,000 farmers annually.

Results

Over 300 additional farmers used soil testing in 2007. Soil test analysis numbers were up about 10%.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

Outcome #6

1. Outcome Measures

Number of acres under reduced tillage

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	5000000	1000000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Reduced tillage decreases fuel use and increases soil conservation and future crop production potential.

What has been done

A series of meetings that included discussion of reduced tillage benefits was provided, along with new written materials.

Results

An additional 5% of crop acres (1,000,000 acres) was in some kind of reduced tillage compared to previous years.

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment
205	Plant Management Systems

Outcome #7

1. Outcome Measures

Number of farmers using reduced energy technologies

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	250	250

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Reduction in energy use on the farm helps farm profitability.

What has been done

Numerous meetings that discussed reduced tillage options, better nutrient management and other energy saving technologies were provided along with new written materials.

Results

Approximately 250 additional farmers used reduced energy technologies, including RTK GPS and reduced tillage systems.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
402	Engineering Systems and Equipment
404	Instrumentation and Control Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought,weather extremes,etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- During (during program)

Evaluation Results

Evaluations were important in providing data that could be used not only to substantiate changes in knowledge and intentions to change, but also to estimate changes in programs without a direct evaluation summary.

Key Items of Evaluation

Change in knowledge/Intent to change management/testimony of past changes based on past information received.

Program #3

V(A). Planned Program (Summary)

1. Name of the Planned Program

Plant Breeding

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
202	Plant Genetic Resources	0%		25%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		25%	
204	Plant Product Quality and Utility (Preharvest)	0%		5%	
211	Insects, Mites, and Other Arthropods Affecting Plants	0%		5%	
212	Pathogens and Nematodes Affecting Plants	0%		40%	
	Total	0%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	13.0	0.0
Actual	0.0	0.0	13.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	442000	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	650000	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Develop improved cultivars and inbreds
- Evaluate elite lines from other breeding programs
- Develop resource material
- Provide presentations and workshops
- Identify emerging issues
- Evaluate effectiveness of activities

2. Brief description of the target audience

- Producers
- Processors that utilize the grain
- Crop consultants
- Local and regional commodity groups
- Personnel in agribusiness/agrifinance
- Personnel working for government agencies

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2007	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	3
2007 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	0	42	42

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

Not reporting on this Output for this Annual Report

Year	Target	Actual
2007	{No Data Entered}	{No Data Entered}

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Estimated dollar value new cultivars bring to North Dakota
2	Longevity of continued use of cultivars by producers and processors
3	Percent of acreage that our cultivar releases occupy for each of the crops we breed
4	Changes in breeding priorities that match needs
5	Addition of new breeding programs or addition of responsibilities to existing programs
6	Number of teams working together to develop genetic solutions
7	Number of individuals growing improved cultivars
8	Number of other breeding programs using NDSU developed germplasm

Outcome #1**1. Outcome Measures**

Estimated dollar value new cultivars bring to North Dakota

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	35000000	290600000

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Producers, seedsmen, grain merchandisers, processors, crop consultants, plant breeders, and extension staff interested in new cultivars that bring them increased revenue.

What has been done

Released new varieties

Results

Faller Wheat est. \$250,000,000
 Lariat and Stampede pinto bean \$17,600,000
 Sheyenne non-transgenic soybean \$4,500,000
 RG7008RR soybean \$1,000,000
 Pinnacle two-rowed barley \$17,500,000

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
202	Plant Genetic Resources
204	Plant Product Quality and Utility (Preharvest)
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
212	Pathogens and Nematodes Affecting Plants

Outcome #2**1. Outcome Measures**

Longevity of continued use of cultivars by producers and processors

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	0	0

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

What has been done**Results****4. Associated Knowledge Areas**

KA Code	Knowledge Area
202	Plant Genetic Resources

Outcome #3**1. Outcome Measures**

Percent of acreage that our cultivar releases occupy for each of the crops we breed

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	0	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done**Results****4. Associated Knowledge Areas**

KA Code	Knowledge Area
202	Plant Genetic Resources

Outcome #4**1. Outcome Measures**

Changes in breeding priorities that match needs

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	3	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)**What has been done**

Work with new canola breeder to develop marker systems that work on traits of interest.

Results

Seedsmen, plant breeders, and extension staff that look forward to new canola cultivars developed using marker assisted selection.

4. Associated Knowledge Areas

KA Code	Knowledge Area
204	Plant Product Quality and Utility (Preharvest)
212	Pathogens and Nematodes Affecting Plants
211	Insects, Mites, and Other Arthropods Affecting Plants
202	Plant Genetic Resources
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants

Outcome #5**1. Outcome Measures**

Addition of new breeding programs or addition of responsibilities to existing programs

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	1	1

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Producers, seedsmen, crop consultants, and extension staff

What has been done

Began the search to hire a pulse crop breeder

Results

Offered the job to one of the applicants, but the offer was termed down. The search for the pulse breeder will continue in early 2008.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
202	Plant Genetic Resources
212	Pathogens and Nematodes Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants

Outcome #6**1. Outcome Measures**

Number of teams working together to develop genetic solutions

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	7	7

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Producers, crop consultants, and extension staff that look forward to the new cultivars to promote and grow.

What has been done

Teams of breeders, pathologists, cereal chemists and entomologists work together to develop improved cultivars.

Results

Examples of teams include wheat breeders and pathologists working together to develop cultivars resistant to Fusarium head blight (FHB). Barley breeder and pathologist working together to develop cultivars resistant to FHB. Soybean breeder and pathologist working together to develop cultivars resistant to soybean cyst nematode. Potato breeder and pathologists working together to develop cultivars resistant to multiple pathogens. Barley breeder and cereal chemist working together to develop cultivars with improved resistance to pre-harvest sprouting.

4. Associated Knowledge Areas

KA Code	Knowledge Area
204	Plant Product Quality and Utility (Preharvest)
211	Insects, Mites, and Other Arthropods Affecting Plants
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
212	Pathogens and Nematodes Affecting Plants
202	Plant Genetic Resources

Outcome #7**1. Outcome Measures**

Number of individuals growing improved cultivars

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	14500	14500

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Producers, seedsmen, breeders, crop consultants, and extension personnel

What has been done**Results**

Released new varieties accepted by producers and end users. Materials include Pinnacle two-rowed barley, six corn inbreds and 3 germplasm lines, Faller wheat, and Lariat and Stamped pinto bean

4. Associated Knowledge Areas

KA Code	Knowledge Area
204	Plant Product Quality and Utility (Preharvest)
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
202	Plant Genetic Resources

Outcome #8

1. Outcome Measures

Number of other breeding programs using NDSU developed germplasm

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	15	76

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Plant breeders that ask for new varieties and germplasm

What has been done

Germplasm, including new cultivars, has been shared with public and private breeders, both domestically and internationally.

Results

Examples of sharing includes soybean germplasm with three private companies in the U.S.; corn germplasm shared with 11 private companies and 18 public breeders; wheat germplasm with Hessian fly resistance shared with public breeders; dry bean germplasm shared with public breeders in NE, CO, MI, and USDA-ARS; and durum wheat germplasm shared with two domestic private breeders and one international private breeder.

4. Associated Knowledge Areas

KA Code	Knowledge Area
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
202	Plant Genetic Resources
211	Insects, Mites, and Other Arthropods Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
212	Pathogens and Nematodes Affecting Plants

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Government Regulations

Brief Explanation

V(l). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- During (during program)

Evaluation Results

Key Items of Evaluation

Program #4

V(A). Planned Program (Summary)

1. Name of the Planned Program

Weed Science

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
213	Weeds Affecting Plants	0%		50%	
215	Biological Control of Pests Affecting Plants	0%		20%	
216	Integrated Pest Management Systems	0%		30%	
	Total	0%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	4.0	0.0
Actual	0.0	0.0	4.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	136000	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	200000	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

1. Evaluate new herbicides, herbicide formulations, and new adjuvants
2. Determine antagonisms between herbicides
3. Determine better methods for applying herbicides
4. Determine the prevalence of herbicide resistant weeds
5. Provide presentations and workshops

2. Brief description of the target audience

1. Producers
2. Crop consultants
3. Extension state specialists and county educators
4. Commodity groups
5. Personnel in agribusiness and agrifinance
6. Personnel working for government agencies

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2007	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	5
2007 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	2	3	5

V(F). State Defined Outputs

Output Target

Output #1**Output Measure**

- Changes in weed science research priorities that match needs

Year	Target	Actual
2007	1	1

Output #2**Output Measure**

- Yearly updating of Weed Control Guide to reflect new herbicides and knowledge gained through research

Year	Target	Actual
2007	1	1

Output #3**Output Measure**

- Number of teams working together to develop solutions

Year	Target	Actual
2007	3	3

Output #4**Output Measure**

- Development of enhanced weed-management strategies that incorporate knowledge gained on the biology of weeds

Year	Target	Actual
2007	0	0

Output #5**Output Measure**

- Improved control of invasive perennial weeds using integrated methods

Year	Target	Actual
2007	0	0

Output #6**Output Measure**

- Delayed evolution of herbicide-resistant weeds

Year	Target	Actual
2007	0	0

Output #7**Output Measure**

- Estimated dollar value weed-control brings to North Dakota

Year	Target	Actual
2007	1000000000	903000000

Output #8**Output Measure**

- Percent of producers that utilize our recommendations

Year	Target	Actual
2007	90	90

Output #9**Output Measure**

- Longevity of continued use of our recommendations for weed control by producers

Year	Target	Actual
2007	0	0

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Changes in weed science research priorities that match needs
2	Yearly updating of Weed Control Guide to reflect new herbicides and knowledge gained through research
3	Number of teams working together to develop solutions
4	Development of enhanced weed-management strategies that incorporate knowledge gained on the biology of weeds
5	Improved control of invasive perennial weeds using integrated methods
6	Delayed evolution of herbicide-resistant weeds
7	Estimated dollar value weed-control brings to North Dakota
8	Percent of producers that utilize our recommendations
9	Longevity of continued use of our recommendations for weed control by producers

Outcome #1**1. Outcome Measures**

Changes in weed science research priorities that match needs

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	{No Data Entered}	1

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Producers, extension staff, and crop consultants

What has been done

Research emphasis has increased on yellow toadflax and decreased on leafy spurge

Results

Control of leafy spurge has increased with the use of the integrated use of biocontrol and chemical spray methods. Yellow toadflax is becoming an increased burden to grower; thus, research work on control of this weed will increase.

4. Associated Knowledge Areas

KA Code	Knowledge Area
213	Weeds Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

Outcome #2**1. Outcome Measures**

Yearly updating of Weed Control Guide to reflect new herbicides and knowledge gained through research

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	{No Data Entered}	1

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Producers, extension staff, and crop consultants

What has been done

Weed control guide has been updated.

Results

25,000 weed control guides are published annually and none are left by the end of the year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
215	Biological Control of Pests Affecting Plants

Outcome #3**1. Outcome Measures**

Number of teams working together to develop solutions

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	{No Data Entered}	3

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Producers, extension staff, and crop consultants

What has been done

Teams include researchers working on control of annual weeds, perennial weeds, and herbicide resistant weeds.

Results

Weed control guide is published annually that is based on the on the work of these three teams.

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems
215	Biological Control of Pests Affecting Plants
213	Weeds Affecting Plants

Outcome #4**1. Outcome Measures**

Development of enhanced weed-management strategies that incorporate knowledge gained on the biology of weeds

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
215	Biological Control of Pests Affecting Plants

Outcome #5

1. Outcome Measures

Improved control of invasive perennial weeds using integrated methods

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
215	Biological Control of Pests Affecting Plants

Outcome #6

1. Outcome Measures

Delayed evolution of herbicide-resistant weeds

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems
213	Weeds Affecting Plants
215	Biological Control of Pests Affecting Plants

Outcome #7

1. Outcome Measures

Estimated dollar value weed-control brings to North Dakota

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	{No Data Entered}	903000000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Producers, pesticide producing companies, extension staff, and crop consultants

What has been done

Weed control guide is published annually.

Results

Producers heed the recommendations of the weed control guide and improve the competitiveness of their crops against weeds.

4. Associated Knowledge Areas

KA Code	Knowledge Area
213	Weeds Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

Outcome #8**1. Outcome Measures**

Percent of producers that utilize our recommendations

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	{No Data Entered}	90

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Producers, extension staff, crop consultants, and chemical companies

What has been done

Weed control guide is published and also provided online.

Results

Crops are more competitive against weeds.

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems
215	Biological Control of Pests Affecting Plants
213	Weeds Affecting Plants

Outcome #9**1. Outcome Measures**

Longevity of continued use of our recommendations for weed control by producers

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
213	Weeds Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought,weather extremes,etc.)
- Economy
- Appropriations changes
- Government Regulations

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- During (during program)

Evaluation Results

Key Items of Evaluation

Program #5

V(A). Planned Program (Summary)

1. Name of the Planned Program

Soil Science

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	60%		60%	
205	Plant Management Systems	40%		40%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	1.0	0.0	3.0	0.0
Actual	1.0	0.0	3.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
28000	0	102000	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
42000	0	150000	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

•N rate calibration research projects •Update producer-oriented resource materials to reflect research results of N rate studies •Present research results at workshops, field days and conferences •Compare tillage methods through rotations in the Valley •Investigate tiled drainage newly installed on soil physical and chemical properties, and quality of water effluent

2. Brief description of the target audience

•Growers •Soil testing laboratories •Government agencies •Federal land managers •Consultants, agricultural commodity staff •Public

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	4000	30000	0	0
2007	5000	200000	100	500

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	2
2007 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	20	6	26

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

Not reporting on this Output for this Annual Report

Year	Target	Actual
2007	{No Data Entered}	{No Data Entered}

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Number of individuals receiving individual assistance
2	Number of individuals decreasing N use
3	Number of individuals using alternative N sources
4	Number of individuals implementing recommended action or practice
5	Continued decline of N in ground and surface water
6	Estimated dollar value of adopted best management practices (\$)
7	Less commercial N is used (%)
8	Amount of N in ground and surface water is reduced

Outcome #1**1. Outcome Measures**

Number of individuals receiving individual assistance

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	2000	2000

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Grower N rates applied are higher than they need to be and fertilizer costs are high.

What has been done

Many growers lowered N rates applied and/or began banding phosphates to increase efficiency and reduce rates of application.

Results

Research into the N response in canola, wheat, corn, and flax. Grower trainings in new recommendations and research results.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems

Outcome #2**1. Outcome Measures**

Number of individuals decreasing N use

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	1000	1000

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

N rates in dry beans and canola may be excessive.

What has been done

New research in dry bean and canola showing lower N rates are appropriate. New circulars were written and training given.

Results

Estimated that 1000 dry bean, canola growers used lower rates of N in 2007 than previously.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
102	Soil, Plant, Water, Nutrient Relationships

Outcome #3**1. Outcome Measures**

Number of individuals using alternative N sources

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	400	500

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Use of N credits for previous crops (sugar beet tops and legumes) underused.

What has been done

New research, circular update.

Results

Estimate that 500 additional growers either use crop credits or use greater amounts than recently published.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
102	Soil, Plant, Water, Nutrient Relationships

Outcome #4**1. Outcome Measures**

Number of individuals implementing recommended action or practice

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	1000	1000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Growers would benefit from use of precision technologies, tillage improvements or nutrient management changes.

What has been done

Extensive research into zone soil sampling and crop management, Research into strip tillage, Offering training in banding fertilizers and other technologies.

Results

An additional 1000 growers are using precision technologies, upgrading tillage management, and utilizing scientific nutrient management strategies.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
102	Soil, Plant, Water, Nutrient Relationships

Outcome #5

1. Outcome Measures

Continued decline of N in ground and surface water

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	0	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Low nitrate levels are desirable to limit algal blooms and for health. Nitrate levels in ground and surface water are partially related to N additions within watersheds.

What has been done

Training in soil testing and use of technologies will limit excessive N rates.

Results

Some growers have embraced newer recommendations and limit N additions to certain crops.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems

Outcome #6

1. Outcome Measures

Estimated dollar value of adopted best management practices (\$)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	4000000	4000000

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Reduced N rates with no crop yield or quality consequences increase grower profits.

What has been done

Training on reduction in N applied to dry bean, canola, and flax.

Results

Estimated that 500,000 acres had a 20 lbs/ac reduced N rate. At \$.40/lb of N, growers advantage was \$4,000,000.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
102	Soil, Plant, Water, Nutrient Relationships

Outcome #7**1. Outcome Measures**

Less commercial N is used (%)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	2	0

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Less commercial N used means less overhead expenses to growers and less off-site potential pollution.

What has been done

Data will be collected in late summer 2008.

Results

Training has been conducted and circulars have been written and distributed.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems

Outcome #8

1. Outcome Measures

Amount of N in ground and surface water is reduced

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	0	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Public Policy changes
- Government Regulations

Brief Explanation

Government regulations could accelerate or impede progress towards stated goals by making financial benefits to growers who incorporate management activities, or by making laws or extending crop production goals that reward increased fertilizer use.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- During (during program)

Evaluation Results

Key Items of Evaluation

If government programs enhance or deter our program, examining the rate of adoption before and after a government program implementation will be helpful in separating our work from external forces.

Program #6

V(A). Planned Program (Summary)

1. Name of the Planned Program

Biofuels

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
403	Waste Disposal, Recycling, and Reuse	0%		100%	
	Total	0%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	2.0	0.0
Actual	0.0	0.0	3.5	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	119000	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	175000	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Identify research needs critical to North Dakota. •Identify NDSU faculty, industries and other universities for collaboration.
- Expand research infrastructure and faculty expertise. •Present results through publications and conference presentations.
- Educate through teaching and extension programming.

2. Brief description of the target audience

- Farmers •Policymakers •Biomass processors •Equipment manufacturers •Peer researchers •Students

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2007	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	2
2007 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	1	0	1

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

Not reporting on this Output for this Annual Report

Year	Target	Actual
2007	{No Data Entered}	{No Data Entered}

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Number of faculty collaborations working on biofuels projects.
2	Number of proposals submitted for biofuels projects.
3	Number of graduate students working on biofuels projects.
4	Number of biofuels-related papers published by NDSU faculty.
5	Number of biofuels research proposals submitted.
6	Grant money received for biofuels research.
7	Increased demand for NDSU graduate students in academia/industry.
8	Increase in quality/quantity of student applicants in biofuels-related fields.
9	Increased funding rate for NDSU biofuels research proposals.
10	Biobased industries seek out NDSU faculty for collaborations on biofuels projects.
11	State and federal policymakers seek out NDSU faculty input.

Outcome #1**1. Outcome Measures**

Number of faculty collaborations working on biofuels projects.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	2	12

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

There is an assumption that research quality and impact increases with multidisciplinary collaboration. Such collaboration also increases the likelihood of procuring external funding.

A canola biodiesel plant became operational in Velva, North Dakota in 2007; however, there may not be enough canola seed in the region to sustain operation of this plant over coming years. This directly impacts ADM, Velva and surrounding communities.

Field peas are a potential feedstock to supplement corn in existing ethanol plants in North Dakota.

What has been done

Dr. Wiesenborn has collaborated on two projects with faculty in Mechanical Engineering and Agribusiness and Applied Economics. Dr. Pryor has collaborated on four projects or project proposals with faculty in the departments of Mechanical Engineering, Agribusiness and Applied Economics, Animal and Range Science, and Cereal and Food Science.

A canola breeding program was initiated in 2006 to develop canola varieties which yield higher oil per acre. Samples from approximately 3500 plots were tested in Fall 2007 for oil content and other properties that contribute to the value of the oil for biodiesel use. Future proposed work would extend research to a close relative of canola known as Brassica juncea which may be better suited to western North Dakota and to screening of canola varieties for biodiesel quality. This project involves collaboration between NDSU's Departments of Agribusiness & Applied Economics, Plant Sciences and Agricultural & Biosystems Engineering, Monsanto and ADM. An extension publication addressing the needs of small producers of biodiesel was released in 2007.

A process model was developed to help determine whether mechanical fractionation of field peas will be economical. This involves collaboration between NDSU's Departments of Agribusiness & Applied Economics and Agricultural & Biosystems Engineering.

Results

Oil yield was elevated in a number of tested samples. Results were used by an NDSU canola breeder to select varieties for production at winter nursery sites in Chile, to be tested at NDSU in Spring 2008. This collaboration led to a proposal that was selected for a second Center of Excellence grant of \$1.5 M to be effective July 2008. An additional proposal is pending with USDA.

These projects have helped to foster relationships between departments and are expected to lead to future collaboration. At least two projects have been completed and funding was secured for another.

The developed model is a very good tool for quantifying and characterizing the starch-rich and protein-rich product streams under various scenarios.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse

Outcome #2**1. Outcome Measures**

Number of proposals submitted for biofuels projects.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	2	10

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Proposal submittals are indicative of the type and quantity of work being pursued.

What has been done

One project proposal has been submitted for a canola biodiesel project and another for a biodiesel co-product project. Three separate project proposals were submitted related to biomass-based ethanol. Another project was submitted to industry and two agencies for a beet pulp ethanol project. A final project was proposed for a feedlot/corn ethanol plant feasibility study.

Results

The feedlot/ethanol plant feasibility study and the biodiesel co-product project were both funded. The beet pulp ethanol project has been funded by all parties in 2008. The canola biodiesel proposal and one biomass-based ethanol proposal are still pending. The remaining biomass ethanol proposals were not funded.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse

Outcome #3**1. Outcome Measures**

Number of graduate students working on biofuels projects.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	2	2

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Graduate students complete much of the research done at universities. High quality graduates will be needed to meet the needs of industry, government, and academia.

What has been done

Two graduate students are currently working on projects related to biofuels. Research proposals have requested funding for additional students. Additional graduate students have also been requested through the biennial legislative budget process.

Results

Graduate students are working on projects related to alternative starch feedstock processing for ethanol and co-product development for the biodiesel industry.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse

Outcome #4

1. Outcome Measures

Number of biofuels-related papers published by NDSU faculty.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	2	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Publication of papers is a primary means of dissemination of research results.

What has been done

Several conference papers or posters were presented. Journal articles for some work are in preparation.

Results

Manamperi, W.A., K.C. Chang, and S.W. Pryor. 2007. Separation and Evaluation of Canola Meal and Protein for Industrial Bioproducts, paper RRV-07116. 2007 CSBE/ASABE North Central Intersectional Conference, Fargo, ND Oct 12-13, 2007.

Wilhelmi, A., Wiesenborn, D.P., Gustafson, C., and S.W. Pryor. 2007. Model for Mechanical Fractionation of Field Peas to Supplement a Dry Grind Corn Ethanol Plant, paper RRV-07113. 2007 CSBE/ASABE North Central Intersectional Conference, Fargo, ND Oct 12-13, 2007.

Manamperi, W.A., D. P. Wiesenborn, and S.W. Pryor. 2007. Canola meal protein fractionation and utilization for industrial applications, paper 077036. ASABE International Meeting, Minneapolis, MN July 17-20, 2007.

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4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse

Outcome #5

1. Outcome Measures

Number of biofuels research proposals submitted.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	2	10

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Proposal submittals are indicative of the type and quantity of work being pursued.

What has been done

One project proposal has been submitted for a canola biodiesel project and another for a biodiesel co-product project. Three separate project proposals were submitted related to biomass-based ethanol. Another project was submitted to industry and two agencies for a beet pulp ethanol project.

Results

The feedlot/ethanol plant feasibility study and the biodiesel co-product project were both funded. The beet pulp ethanol project has been funded by all parties in 2008. The canola biodiesel proposal and one biomass-based ethanol proposal are still pending. The remaining biomass ethanol proposals were not funded.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse

Outcome #6**1. Outcome Measures**

Grant money received for biofuels research.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	100000	1140924

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Grant dollars received is indicative of the quality of research proposals being submitted and is necessary for conducting research.

What has been done

Grant proposals have been submitted as described earlier.

Results

Funding was received for biodiesel co-product development and for a feasibility study for a large dairy and anaerobic digester co-located at an existing corn ethanol plant. Additional funds were available that had been awarded in previous years.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse

Outcome #7**1. Outcome Measures**

Increased demand for NDSU graduate students in academia/industry.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	2	0

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

It will be important for industry to have a pool of well-trained students to hire.

What has been done

No students working on biofuels-related projects graduated in 2007. Students are expected to graduate in 2008-2010.

Results**4. Associated Knowledge Areas**

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse

Outcome #8**1. Outcome Measures**

Increase in quality/quantity of student applicants in biofuels-related fields.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	3	0

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Graduate students are required to do much of the experimentation and lab work. Increase in quantity and quality of graduate students would indicate a perception from potential applicants and academia of the quality of research conducted at NDSU.

What has been done

No recruiting of new students was done in 2007 as funding was not available.

Results**4. Associated Knowledge Areas**

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse

Outcome #9**1. Outcome Measures**

Increased funding rate for NDSU biofuels research proposals.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	50000	0

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Funding is highly competitive among national agencies. State agency or industry funding can also be quite competitive. Increased funding rates are indicative of the quality of proposals and research being done at NDSU.

What has been done**Results**

Of the seven biofuel-related projects submitted for funding in 2007, three were funded completely and two are still pending. Only two were not accepted for funding. These projects were funded by a combination of industry and federal and state agencies. This success rate (43-71%) should be considered excellent given many federal funding rates that are often less than 10%.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse

Outcome #10**1. Outcome Measures**

Biobased industries seek out NDSU faculty for collaborations on biofuels projects.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	0	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse

Outcome #11

1. Outcome Measures

State and federal policymakers seek out NDSU faculty input.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	0	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations

Brief Explanation

V(l). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- During (during program)

Evaluation Results

Key Items of Evaluation

Program #7

V(A). Planned Program (Summary)

1. Name of the Planned Program

Insect Management

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
211	Insects, Mites, and Other Arthropods Affecting Plants	55%		55%	
216	Integrated Pest Management Systems	40%		40%	
721	Insects and Other Pests Affecting Humans	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	5.0	0.0
Actual	2.0	0.0	4.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
56000	0	136000	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
84000	0	200000	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

•Assess emerging issues •Provide insect diagnostics •Provide bio-based pest management systems •Meet social and regulatory needs •Evaluate activity effectiveness

2. Brief description of the target audience

•Crop and animal agricultural producers •Home owners •Agribusiness •Government and NGO agency personnel •Medical professionals •Crop consultants •General Public

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	1400	1200	0	0
2007	5000	100000	8000	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	12
2007 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	90	20	110

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

Not reporting on this Output for this Annual Report

Year	Target	Actual
2007	{No Data Entered}	{No Data Entered}

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Pest alerts disseminated through various channels
2	Best management guides based on currently available knowledge made available
3	Relevant research and extension programs initiated
4	Conduct diagnostic review session with Plant Diagnostics Lab
5	Output materials made available to users
6	Assess grower acceptance of new technologies
7	Insect diagnostics and reporting integrated with Plant Diagnostics Lab and others
8	Pest management technologies that meet social and regulatory constraints
9	Valuation of best management practices
10	Estimation of adoption rate of best management practices
11	Insect diagnostic capacity meeting national needs

Outcome #1**1. Outcome Measures**

Pest alerts disseminated through various channels

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	100	550

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Need for relevant insect pest and pest management information.

Audience groups include: crop and animal agricultural producers, homeowners, agribusiness, government and NGO agency personnel, medical professionals, crop consultants, extension professionals and general public.

What has been done

Coordinate the distribution and publication of the Crop & Pest Report during field season and other extension outreach activities in entomology.

Results

The Crop & Pest Report and other extension outreach activities function as a pest alert/advisor on important insect pest and pest management issues in the state.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
721	Insects and Other Pests Affecting Humans

Outcome #2**1. Outcome Measures**

Best management guides based on currently available knowledge made available

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	12	9000

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Need for relevant insect pest and pest management information.

Audience groups include: crop and animal agricultural producers, homeowners, agribusiness, government and NGO agency personnel, medical professionals, crop consultants, extension professionals and general public.

What has been done

Coordinate writing, publication and distribution of the entomology publications, such as the North Dakota Field Crop Insect Management Guide and other extension bulletins.

Results

These extension publications serve as an important resource for making accurate pest management decisions and provide updates on insecticides and other issues of economically important insect pests in the state.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
721	Insects and Other Pests Affecting Humans
216	Integrated Pest Management Systems

Outcome #3**1. Outcome Measures**

Relevant research and extension programs initiated

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	1	1

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Need for real-time insect pest information and updates on new research of important insect pests. Audience groups include: crop and animal agricultural producers, homeowners, agribusiness, government, extension professionals, crop consultants, and general public.

What has been done

Coordinate NDSU Extension's Integrated Pest Management (IPM) survey program and applied research programs.

Results

IPM Survey information provide real-time data using GPS-maps to display the presence/absence and population levels of the major insect pests of ND. This information is posted weekly on the NDSU IPM website and assists ND producers, crop consultants and extension agents in making crucial pest management decisions. Data verifies the absence of pests, like cereal leaf beetle, that are of export concern. Pest observations from the IPM Survey feed into the Crop & Pest Report, which functions as a pest alert/advisor on important pest issues in the state. Current applied research efforts have evaluated alternative to chemical control of insect pests including biological control, host plant resistance and cultural control strategies.

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
721	Insects and Other Pests Affecting Humans

Outcome #4**1. Outcome Measures**

Conduct diagnostic review session with Plant Diagnostics Lab

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	1	2

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Need for accurate insect diagnostic.

Audience groups include: crop and animal agricultural producers, homeowners, agribusiness, government, extension professionals, crop consultants, and general public.

What has been done

Thousands of insect identifications were conducted through NDSU Extension Entomology. Proper insect identification is key to knowing how to control any insect pest.

Results

The diagnostic effort has provided accurate insect identifications to many different audience groups. In turn, this has resulted in the diagnostician providing the proper pest management information based on the 'correct' insect identification.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
721	Insects and Other Pests Affecting Humans

Outcome #5**1. Outcome Measures**

Output materials made available to users

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	16	16

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Need for relevant insect pest and pest management information.

Audience groups include: crop and animal agricultural producers, homeowners, agribusiness, government and NGO agency personnel, medical professionals, crop consultants, extension professionals and general public.

What has been done

Coordinate writing, publication and distribution of the entomology publications, such as the North Dakota Field Crop Insect Management Guide and other extension bulletins, and website information.

Results

The website and publications of extension entomology serve as an important resource for many audience groups in making accurate pest management decisions on economically important insect pests in the state.

4. Associated Knowledge Areas

KA Code	Knowledge Area
721	Insects and Other Pests Affecting Humans
216	Integrated Pest Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants

Outcome #6

1. Outcome Measures

Assess grower acceptance of new technologies

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	1	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems

Outcome #7

1. Outcome Measures

Insect diagnostics and reporting integrated with Plant Diagnostics Lab and others

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	14000	14000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Need for accurate reporting of insect diagnostic.

Audience groups include: crop and animal agricultural producers, homeowners, agribusiness, government, extension professionals, crop consultants, and general public.

What has been done

Extension Entomology actively participates in the regional Great Plains Diagnostic Network (GPDN), part of the National Plant Diagnostic Network (NPDN). Hundreds of insect identifications were entered into the NPDN database that serves as the official insect reference for the State of North Dakota along with NDSU's Insect Museum in the Department of Entomology. Proper insect identification is key to knowing how to control any insect pest.

Results

The diagnostic effort has resulted in accurate insect identifications and an historical database of insect identifications in the State of North Dakota.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
721	Insects and Other Pests Affecting Humans

Outcome #8

1. Outcome Measures

Pest management technologies that meet social and regulatory constraints

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	1	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems

Outcome #9

1. Outcome Measures

Valuation of best management practices

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	2	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems

Outcome #10

1. Outcome Measures

Estimation of adoption rate of best management practices

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	1	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done**Results****4. Associated Knowledge Areas**

KA Code	Knowledge Area
216	Integrated Pest Management Systems

Outcome #11**1. Outcome Measures**

Insect diagnostic capacity meeting national needs

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	0	1

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Need for insect diagnostic capacity meeting national needs.

Audience groups include: crop and animal agricultural producers, homeowners, agribusiness, government, extension professionals, crop consultants, and general public.

What has been done

Extension Entomology actively participates in the National Plant Diagnostic Network (NPDN). Hundreds of insect identifications were entered into the NPDN database that serves as one of the official insect references for the State of North Dakota.

Results

The NPDN database provides a central database to house national insect diagnostic data and will provide an historical reference database of insects in the State of North Dakota over the years.

4. Associated Knowledge Areas

KA Code	Knowledge Area
721	Insects and Other Pests Affecting Humans

V(H). Planned Program (External Factors)**External factors which affected outcomes**

- Natural Disasters (drought, weather extremes, etc.)
- Appropriations changes
- Public Policy changes
- Government Regulations

Brief Explanation

V(l). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- During (during program)

Evaluation Results

Key Items of Evaluation

Program #8

V(A). Planned Program (Summary)

1. Name of the Planned Program

Center for Nutrition and Pregnancy

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
301	Reproductive Performance of Animals	0%		40%	
302	Nutrient Utilization in Animals	0%		40%	
305	Animal Physiological Processes	0%		10%	
702	Requirements and Function of Nutrients and Other Food Components	0%		10%	
Total		0%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	4.0	0.0
Actual	0.0	0.0	4.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	136000	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	200000	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

•Research projects •Train students •Teach producers •Publish research •Secure funding •Develop recommendations •Identify emerging trends and issues •Improve methodology •Collaborate •Present data at meetings

2. Brief description of the target audience

•Students: graduate and under-graduate •Livestock producers •Human health professionals •Scientific peer groups •Policy and agency influences •Media professionals

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2007	346	20000	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	10
2007 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	0	17	17

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

Not reporting on this Output for this Annual Report

Year	Target	Actual
2007	{No Data Entered}	{No Data Entered}

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Numbers of producers with enhanced knowledge from livestock programming events
2	Number of grant requests for multidisciplinary educational, extension and research collaborative activities
3	Number of visiting scientists to the NDSU Department of Animal and Range Sciences
4	Monitor cases of pregnancy-based metabolic diseases
5	Monitor North Dakota agricultural statistics to measure pregnancy rates of North Dakota livestock operations

Outcome #1**1. Outcome Measures**

Numbers of producers with enhanced knowledge from livestock programming events

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	25	25

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Students: graduate and under-graduate; Livestock producers; Human health professionals; Scientific peer groups; Policy and agency influences; Media professionals

The issue of nutritional impacts on pregnancy outcome is of high importance because:

- * Reproductive performance of animals is a major component of the efficiency of livestock production; it also is a major component of socioeconomic well-being of humans.
- * Reproductive performance is impacted dramatically by maternal and offspring nutrition.
- * Maternal and offspring nutrition impact birth weights and neonatal survival and growth.
- * Maternal and offspring nutrition also have a major impact on health and well-being during infancy and throughout adulthood, a concept known as 'fetal programming' or, more accurately, 'developmental programming'.
- * Importantly, the phenotypes impacted by maternal and offspring nutrition (e.g., growth rate, efficiency of growth, reproductive performance, etc.) are the very ones we use for animal selection, whether by traditional means or by molecular markers (i.e., marker-assisted selection).
- * Additionally, the impacts of maternal and offspring nutrition in one generation have now been shown to extend across multiple generation, potentially via epigenetic mechanisms.
- * All of the groups named above have a major stake in the outcome of studies investigating the impact of nutrition during pregnancy and also during infancy on the long-term health and productivity of the offspring.

What has been done**Results****4. Associated Knowledge Areas**

KA Code	Knowledge Area
301	Reproductive Performance of Animals
702	Requirements and Function of Nutrients and Other Food Components
305	Animal Physiological Processes
302	Nutrient Utilization in Animals

Outcome #2**1. Outcome Measures**

Number of grant requests for multidisciplinary educational, extension and research collaborative activities

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	5	12

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Students: graduate and under-graduate
 Livestock producers
 Human health professionals
 Scientific peer groups
 Policy and agency influences
 Media professionals

What has been done

12 Grant proposals submitted to various agencies, entities

Results

Grants pending

4. Associated Knowledge Areas

KA Code	Knowledge Area
702	Requirements and Function of Nutrients and Other Food Components
305	Animal Physiological Processes
302	Nutrient Utilization in Animals
301	Reproductive Performance of Animals

Outcome #3**1. Outcome Measures**

Number of visiting scientists to the NDSU Department of Animal and Range
 Sciences

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	5	2

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Students: graduate and under-graduate
 Livestock producers
 Human health professionals
 Scientific peer groups
 Policy and agency influences
 Media professionals

What has been done

Visits by 2 visiting scientists

1. Dr. Grazyna Ptak, University of Teramo, Italy (February 1 through 11, 2007)
2. Dr. Shireen Hafez, University of Alexandria, Egypt (February 9 through April 8, 2007)

Results

Dr. Grazyna Ptak, University of Teramo, Italy - continuation of an ongoing collaboration established in 2005 to study the role of defects in placentation, and the mechanisms thereof, in the high rate of embryonic mortality and morbidity in embryos from assisted reproductive technologies (e.g., in vitro fertilization and cloning, etc.), with the eventual goal of establishing the role of maternal nutrition in these processes.

Dr. Shireen Hafez, University of Alexandria, Egypt - establishment of a collaborative effort to establish methods to investigate the 3-dimensional architecture of the placental vascular bed and to determine its contribution to the major role we have previously found for placental vascular development in mediating the effects of maternal nutrition on fetal growth and development.

4. Associated Knowledge Areas

KA Code	Knowledge Area
305	Animal Physiological Processes
702	Requirements and Function of Nutrients and Other Food Components
302	Nutrient Utilization in Animals
301	Reproductive Performance of Animals

Outcome #4

1. Outcome Measures

Monitor cases of pregnancy-based metabolic diseases

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	0	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals

Outcome #5

1. Outcome Measures

Monitor North Dakota agricultural statistics to measure pregnancy rates of North Dakota livestock operations

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	0	0

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)****What has been done****Results****4. Associated Knowledge Areas**

KA Code	Knowledge Area
301	Reproductive Performance of Animals

V(H). Planned Program (External Factors)**External factors which affected outcomes**

- Economy
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation**V(I). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

- Retrospective (post program)
- During (during program)

Evaluation Results**Key Items of Evaluation**

Program #9

V(A). Planned Program (Summary)

1. Name of the Planned Program

Nutrition of Grazing Livestock

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
121	Management of Range Resources	50%		0%	
302	Nutrient Utilization in Animals	50%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	6.0	0.0	0.0	0.0
Actual	6.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
168000	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
252000	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Develop presentation materials
- Develop resource material
- Provide presentations and workshops
- Translate scientific materials into lay materials
- Identify emerging issues
- Evaluate effectiveness of activities

2. Brief description of the target audience

- Livestock producers
- 4-H youth
- Feed and pharmaceutical industry personnel
- Government agency personnel
- Veterinarians

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	300	750	0	0
2007	444	1100	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2007 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	1	1	2

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

Not reporting on this Output for this Annual Report

Year	Target	Actual
2007	{No Data Entered}	{No Data Entered}

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Number of individuals receiving training and education
2	Number of individuals demonstrating increase in subject knowledge and skills
3	Number of producers implementing recommended actions or practices
4	Number of producers participating in government cost-share programs for range conservation
5	Estimated cost of production for North Dakota cattle ranches
6	Number of ranches implementing range management practices

Outcome #1**1. Outcome Measures**

Number of individuals receiving training and education

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	300	723

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Beef cattle producers face increasing feed costs in light of increased demand worldwide for cereal grains. Even though limited amounts of corn are fed to beef cows, the prices of all other feed ingredients, including forages, have increased dramatically in response to increased demand for cereal grains. Therefore, it is imperative that beef producers understand proper beef cattle nutrition in order to reduce costs and remain profitable.

What has been done

In 2007, we conducted 18 meetings which were related to beef cattle nutrition or feed costs. We also developed newsletter articles and news releases related to ways to reduce feeding costs and maintain or improve cow nutrition.

Results

A total of 723 beef cattle producers, feed industry personnel, veterinarians, and agency employees attended these workshops.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals

Outcome #2**1. Outcome Measures**

Number of individuals demonstrating increase in subject knowledge and skills

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	200	252

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Beef cattle producers face increasing feed costs in light of increased demand worldwide for cereal grains. Even though limited amounts of corn are fed to beef cows, the prices of all other feed ingredients, including forages, have increased dramatically in response to increased demand for cereal grains. Therefore, it is imperative that beef producers understand proper beef cattle nutrition in order to reduce costs and remain profitable.

What has been done

In 2007, we measured a change in knowledge at 7 meetings which were related to beef cattle nutrition or feed costs.

Results

Producers indicated that the material presented at the meetings was beneficial and would help them better manage their beef cattle operations and help them improve profitability.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals

Outcome #3**1. Outcome Measures**

Number of producers implementing recommended actions or practices

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	25	12

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Livestock producers are concerned with rising costs of rental pastures, forage and feedstuffs. By implementing recommended practices or actions, greater production can be achieved on the same land base through improved grazing practices and use of efficient forage harvesting techniques.

What has been done

Land managers furthered their knowledge and understand through three - two and three-day educational programs to improve their efficiency of range, pasture and forage harvest techniques.

Results

Producers indicated that the material presented at the meetings was beneficial and would help them better manage their beef cattle operations, help them improve profitability, and increase harvest efficiency in grazing and haying operations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
121	Management of Range Resources
302	Nutrient Utilization in Animals

Outcome #4**1. Outcome Measures**

Number of producers participating in government cost-share programs for range conservation

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	25	32

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Numerous federal and state government agencies have provided incentives through government cost-sharing programs. Livestock producers are interesting in learning and using these incentive programs and matching dollars to improve their range management practices and livestock production per given land base.

What has been done

Sixteen educational programs were conducted in collaboration with the Natural Resources Conservation Service and North Dakota State University Extension Service for private land managers.

Results

Over 600 livestock producers participated in these workshops and training sessions, with over 30 landowners known to have participated and incorporate cost-sharing programs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
121	Management of Range Resources

Outcome #5**1. Outcome Measures**

Estimated cost of production for North Dakota cattle ranches

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	400	425

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Beef cattle producers face increasing feed costs in light of increased demand worldwide for cereal grains. Even though limited amounts of corn are fed to beef cows, the prices of all other feed ingredients, including forages, have increased dramatically in response to increased demand for cereal grains. Therefore, it is imperative that beef producers understand proper beef cattle nutrition in order to reduce costs and remain profitable.

What has been done

Records from the ND Farm Business Management Association for North Dakota beef cattle operations are used to monitor cost of production on North Dakota beef cattle operations.

Results

These records indicate that cost of production has increased due to inflationary pressures on feed and energy costs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals

Outcome #6**1. Outcome Measures**

Number of ranches implementing range management practices

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	100	125

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Livestock producers are concerned with rising costs of rental pastures, forage and feedstuffs. Numerous federal and state government agencies have provided incentives through government cost-sharing programs. By implementing recommended practices or actions, cost-share programs have been successfully captured, creating greater production on the same land base through improved grazing practices and use of efficient forage harvesting techniques.

What has been done

Sixteen educational programs were conducted in collaboration with the Natural Resources Conservation Service and North Dakota State University Extension Service for private land managers.

Results

Although over 30 private landowners secured cost-shared money, an estimated 125 land managers have incorporated some form of improved land management practice to increase the economic return from their land base.

4. Associated Knowledge Areas

KA Code	Knowledge Area
121	Management of Range Resources

V(H). Planned Program (External Factors)**External factors which affected outcomes**

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Public Policy changes
- Government Regulations

Brief Explanation**V(I). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

- Retrospective (post program)
- During (during program)

Evaluation Results

Key Items of Evaluation

Program #10

V(A). Planned Program (Summary)

1. Name of the Planned Program

Food Safety

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
504	Home and Commercial Food Service	75%		0%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	25%		0%	
Total		100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	7.0	0.0	0.0	0.0
Actual	7.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c 196000	1890 Extension 0	Hatch 0	Evans-Allen 0
1862 Matching 294000	1890 Matching 0	1862 Matching 0	1890 Matching 0
1862 All Other 0	1890 All Other 0	1862 All Other 0	1890 All Other 0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Implement programs for children and adults based on Fight BAC, Thermy, Produce Safety and BAC Down campaigns; USDA food preservation rules; and implement food safety programs for foodservice and processors (ServSafe, TAPS, HACCP).

2. Brief description of the target audience

Children in school and youth program settings

Teen food handlers in high school and community

Adults in home settings

Volunteer food handlers in community settings

Professionals in foodservice and food processing environments

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	5000	400000	5000	20000
2007	37350	520000	3300	24000

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2007 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	5	0	5

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

Not reporting on this Output for this Annual Report

Year	Target	Actual
2007	{No Data Entered}	{No Data Entered}

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Based on post-surveys, 75 percent of children participating in handwashing classes will report intentions to wash hands properly
2	Based on post-surveys, 50 percent of teens will report changes in food handling practices to reduce risk of foodborne illness outbreaks
3	Seventy-five percent of foodservice and food industry participants in ServSafe, HACCP or other food sanitation courses will pass the examination.
4	Based on post-surveys, 50 percent of adult participants in consumer food safety classes will report intent to change one or more food handling behaviors.

Outcome #1**1. Outcome Measures**

Based on post-surveys, 75 percent of children participating in handwashing classes will report intentions to wash hands properly

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	2000	2200

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

According to the Centers for Disease Control and Prevention (CDC), hand washing is the single most important means of preventing the spread of disease. Studies in schools and childcare centers have shown links between improper or infrequent hand washing and colds, flu and foodborne illness outbreaks.

What has been done

Initiated in 2002, the 'Wash Your Hands' project instructors used a fluorescing dye and ultraviolet light to show areas the students missed washing. The students were provided a handout showing a hand and asked to mark the spots they missed washing (where the dye remained). A follow-up survey was implemented with teachers to determine their observations of behavior change among children in their classrooms.

Results

Based on 'seeing' where 'germs' might hide on hands using a fluorescing dye and ultraviolet light, the 'Wash Your Hands' project has reached more than 10,000 children in grades K-12 in schools throughout North Dakota.

Fingertips, back of hand and wrists were commonly missed areas. According to post-surveys with students, about 92 percent said they would wash their hands more often, and 90 percent said they would wash their hands more carefully. About 86 percent of teachers reported that they talk about handwashing to students, and 71 percent reported that their students wash their hands more often during school time.

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service

Outcome #2**1. Outcome Measures**

Based on post-surveys, 50 percent of teens will report changes in food handling practices to reduce risk of foodborne illness outbreaks

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	1500	1200

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

'Teens Serving Food Safely' is a statewide NDSU Extension Service food safety education effort designed to improve young food handlers' food safety knowledge and skills and decrease risk of foodborne illness outbreaks associated with food service establishments. According to a 2000 U.S. Department of Labor report, 32% of employed 15- to 17- year olds work in eating and drinking establishments. Teaching young food handlers the 'rules' could have significant public health implications.

What has been done

The pilot-tested 'Teens' curriculum consists of five lessons based on the Fight BAC and Thermo national food safety campaign concepts, with pre/post and follow-up evaluation procedures. Youth benefit from the curriculum's experiential learning model, obtaining information and tools to share with their families.

Results

Knowledge scores, as measured by pre/post testing, increased from 54 percent correct on the pre-test to 87 percent on the post-test. About 62 percent of participants had been involved in food preparation for the public. As measured by a follow-up survey, 77 percent reported washing their hands more often during food preparation, 45 percent reported thawing foods more safely (in the refrigerator or microwave oven), 65 percent reported being more careful about cleaning and sanitizing utensils, 53 percent had shared their knowledge about food safety with others, 35 percent had already applied what they learned when preparing food for the public, 22 percent are using a food thermometer more often, and 26 percent are checking refrigerator and freezer temperatures more often.

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service

Outcome #3**1. Outcome Measures**

Seventy-five percent of foodservice and food industry participants in ServSafe, HACCP or other food sanitation courses will pass the examination.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	75	51

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Increases in daycare, hospital and nursing home populations as well as a growth in restaurant and deli businesses means a growing portion of the population is at risk from outbreaks of foodborne illness. In addition, quantity food preparation presents unique challenges for safe food handling and preparation. In this environment, more attention has been placed on the development and implementation of safe food handling guidelines. As a result, there is high demand for training and educational materials in food safety.

What has been done

ServSafe Food Safety Certification and HACCP training programs have been conducted for foodservice managers and for members of the food industry. ServSafe is a nationally recognized food safety training program of the National Restaurant Association, with a standardized examination.

Results

About 86 percent of students taking the ServSafe exam have passed the national exam. On post-surveys administered to the students, they indicated they will do the following 'more often' as a result of the class. About 96 percent will train others about the importance of handwashing, and 91 percent plan to wash their hands more often when preparing food. About 91 percent will check the sanitizer concentration, 91 percent will take additional steps to avoid cross-contamination, 89 percent will teach others how to avoid cross-contamination, 85 will teach others how to use a thermometer, and 91 percent will use a food thermometer more often. About 98 percent will apply what they learned at home. Participants reported that they will train 2,243 workers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service

Outcome #4

1. Outcome Measures

Based on post-surveys, 50 percent of adult participants in consumer food safety classes will report intent to change one or more food handling behaviors.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	2000	37315

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Foodborne illness continues to be an issue in the U.S., with increasing numbers of foodborne illnesses are being linked to produce. Food recalls are consistently in the media. Safe refrigeration temperatures and cooling practices are an issue in households across the United States, with refrigeration temperatures not meeting the recommended 40 degrees Fahrenheit or lower.

What has been done

From 2005-07, two national campaigns were being implemented in North Dakota: the 'Fight BAC' and the 'BAC Down' campaigns through our statewide nutrition and food safety education programs. The 'Fight BAC' produce safety campaign promotes concepts such as checking fruits and vegetables for bruises or damage; proper rinsing/cleaning of produce; avoiding cross-contamination; cooking or throwing away fruits or vegetables that have touched raw meat, poultry or their juices. The 'BAC Down' campaign promotes the use of refrigerator thermometers and safe storage temperatures and cooling procedures for perishable foods. To promote these campaigns, lesson plans, displays and games were developed, and training sessions were held with staff across North Dakota.

Results

The produce safety campaign was evaluated with pre/post testing. On the pre-survey, about 26 percent reported 'always' rinsing produce under running water before eating; on the follow-up survey, 42 percent reported 'always' rinsing produce. On the pre-survey, 72 percent reported 'always' separating their fruits and vegetables from household chemicals and raw food, compared to 80 percent on the post-survey. On the pre-survey, 51 percent reported 'always' cooking or throwing away fruits or vegetables that have touched raw meat, poultry, seafood or their juices, compared to 71 percent on the follow-up survey. On the pre-survey, about 39 percent of participants reported 'always' chilling cut produce within two hours compared to 52 percent on the post-survey.

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations

Brief Explanation

These factors did not influence our programming this year.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- During (during program)
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Comparison between locales where the program operates and sites without program intervention

Evaluation Results

Retrospective (post program)

The "Teens Serving Food Safely" program will continue to be evaluated using follow-up surveys. The program is conducted in cooperation with high school Family & Consumer Sciences teachers.

An immigrant/refugee food safety education/evaluation study is being planned and will include food safety classes with post surveys to measure behavior change.

During (during program)

Pre/post surveys for the "Teens Serving Food Safely" program will continue.

Evaluation Results

The data for the "Teens" program is indicated above. The refugee program is in progress with no results to report at this time.

Key Items of Evaluation

The items being evaluated include knowledge of key safety concepts (clean, separate, cook and chill) of the national food safety campaigns ("Fight BAC" and "Thermy."). More specifically, we evaluate the use of food thermometers, implementation of methods to avoid cross contamination and safe chilling practices.

Program #11

V(A). Planned Program (Summary)

1. Name of the Planned Program

Healthy Patterns of Eating & Physical Activity

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
703	Nutrition Education and Behavior	75%		0%	
806	Youth Development	25%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	8.0	0.0	0.0	0.0
Actual	8.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
224000	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
336000	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Identify emerging issues

Translate scientific data

Develop lessons and curricula

Develop public campaigns

Promote changes in public policy

Train extension agents

Develop evaluation methodology

Analyze/report impacts

2. Brief description of the target audience

Youth - schools, afterschool, 4-H

Adults - homes, worksites, communities, people with chronic disease

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	7000	400000	6000	20000
2007	33950	500000	6500	220000

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2007 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	2	0	2

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

Not reporting on this Output for this Annual Report

Year	Target	Actual
2007	{No Data Entered}	{No Data Entered}

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Based on follow-up surveys of adult participants in walking programs, 50 percent will report increased number of steps or minutes of walking
2	Based on follow-up surveys of adult participants in nutrition education programs, 25percent will report a change in behavior to be more consistent with current nutrition recommendations based on MyPyramid
3	Based on follow-up surveys of parents of children participating in nutrition education programs, 25 percent of parents will report a family behavior change to be consistent with current recommendations
4	Based on post-surveys of children involved in multi-session nutrition/fitness classes, 25 percent of participants will report a change in nutrition or fitness behavior to be consistent with current MyPyramid recommendations

Outcome #1**1. Outcome Measures**

Based on follow-up surveys of adult participants in walking programs, 50 percent will report increased number of steps or minutes of walking

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	1000	1040

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Risk for several chronic diseases, including heart disease, cancer, type 2 diabetes and osteoporosis, are related to diet and physical activity. These health conditions cost society an estimated \$200 billion a year in medical expenses and lost productivity. Despite strong evidence supporting the health benefits of a healthy lifestyle, North Dakotans do not meet national physical activity goals. Physical active children and adults benefit from improved physical, mental and social health.

What has been done

Walk North Dakota is a statewide eight-week walking program for adults and youth that uses an interactive Web site for data collection and assessment of miles walked. The program provides biweekly educational e-mails and incentives at the conclusion of the program. Dining with Diabetes also implements a walking program for its participants.

Results

In FY 2007, 720 participants in the Walk North Dakota program walked 296 million steps (148,000 miles) based on results of a Web-based data collection system. According to post-surveys, about 83% of participants reported using pedometers as tools to monitor daily steps; of those, 80% reported an increase in overall activity based on step counts. About 53% reported their number of steps increased as a result of the program, and 96% planned to continue walking for physical fitness. In the Dining with Diabetes program, participants reported an increase in their exercise scores, from 5.77(+or- 2.22) to 6.68(+or- 2.25).

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #2**1. Outcome Measures**

Based on follow-up surveys of adult participants in nutrition education programs, 25percent will report a change in behavior to be more consistent with current nutrition recommendations based on MyPyramid

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	3000	33404

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Cardiovascular disease is the leading cause of death in North Dakota. Nationally, 40 percent of the deaths in the United States are due to heart disease and stroke, with a national annual health care cost of \$260 million. Proper nutrition and regular physical activity are two ways to reduce the risk of cardiovascular disease and other illnesses. According to results of a North Dakota Department of Health survey, only 18 percent of North Dakota adults eat five servings of fruits and vegetables per day and 34 percent of North Dakotans are completely physically inactive outside of work. Dietary intake that follows recommendations is associated with reduced risk of disease and nutritional deficiencies. The MyPyramid recommendations encourage optimal dietary intake for growth, development and good health.

What has been done

Lessons and other educational materials based on MyPyramid were created/adapted and disseminated through our Web site (www.ag.ndsu.edu) and through the Healthy North Dakota community-based program, which encourages participants to eat more fruits and vegetables each day and to get 30 minutes of moderate physical activity five or more days of the week. Community coalitions are working to reduce their residents' chronic disease risks by promoting awareness, helping to build skills, and adapting the community environment and policies to encourage lifestyle change. A complementary program, Dining with Diabetes, targets people with diabetes or at risk of diabetes. A whole grain education program also was implemented. For youth, an 'Eat Smart. Play Hard.' campaign based on the USDA campaign and MyPyramid has been implemented to target families with programs to encourage physical activity and sound nutrition practices based on current MyPyramid guidance.

Results

According to results of the Dining with Diabetes Program, participants ate a more healthful diet, as shown by dietary quality scores, which increased from 29.51(+or- 11.6) to 35.2(+or-8.43). In a MyPyramid-based lesson ('Cooking for One or Two'), 26 percent of participants planned to use MyPyramid guidelines to plan their menu, 38 percent planned to eat a wider variety of foods and 83 percent planned to share the information with others. In the whole grain education program, 86 percent of participants correctly identified health benefits of whole grains. In programming with limited resource audiences, 52 percent indicated sometimes choose fruits/vegetables as snacks, 97 percent indicated an intention to choose fruits and vegetables as snacks, and 95 percent indicated an intention to make physical activity a regular part of their day. In follow-up evaluation with limited income participants (6 weeks after education), 46 percent indicated they always choose low-fat or nonfat milk products, 31 percent indicated they usually choose low-fat or nonfat milk products, 24.5 percent indicated they always choose whole grain products, 42 percent indicated they usually choose whole grain products, 17 percent indicated they always choose fruits/vegetables as snacks, 42 percent indicated they usually choose fruits/vegetables as snacks, and 82 percent make physical activity a regular part of their day.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #3**1. Outcome Measures**

Based on follow-up surveys of parents of children participating in nutrition education programs, 25 percent of parents will report a family behavior change to be consistent with current recommendations

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	2000	3200

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Childhood and adult obesity remain issues of concern in the U.S. Many children are considered overfed but under-nourished. Eating meals as a family is associated with reducing risky behavior as well as improving communication and nutritional quality among children.

What has been done

Two curricula for youth ('Banking on Strong Bones' and 'On the Move to Better Health'), as well as a statewide 'Eat Smart. Play Hard. Together' program have been implemented with parent education components and evaluation. In addition a Web site, www.ndsu.edu/eatsmart, has been created to reach families with MyPyramid information, newsletters and a cookbook.

Results

Parent pre/post surveys were used in both of the curricula. On the parent pre-survey in the 'Banking on Strong Bones' curriculum, about 40 percent of households offered soda pop as a beverage of choice, compared to 36 percent on the post-survey. About 56 percent of parents reported positive changes in their child's eating habits as a result of this program. On the postsurvey, about 71 percent reported eating meals together as a family five or more times per week. In the 'On the Move' program, 60 percent of parents reported an increase in their families' consumption of fruits and vegetables, and 44 percent reported an increase in consumption of dairy products.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #4

1. Outcome Measures

Based on post-surveys of children involved in multi-session nutrition/fitness classes, 25 percent of participants will report a change in nutrition or fitness behavior to be consistent with current MyPyramid recommendations

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	3500	3800

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Childhood obesity remains an issue of concern in the U.S., with some researchers considering children to be 'overfed' but 'undernourished'. Calcium is the nutrient most likely lacking in the American diet. According to the USDA, 70 percent of pre-teen girls and 60 percent of pre-teen boys do not meet daily calcium recommendations.

What has been done

Two curricula are being implemented in North Dakota. 'Banking on Strong Bones' is a five-week, school-based educational intervention for fourth graders, with instruction by NDSU Extension Service Agents/Assistants. The purpose is to increase knowledge/awareness of the role calcium-rich foods and weight-bearing activities play in building and maintaining strong bones among children and to improve food and beverage choices. Families received newsletters designed to improve knowledge of nutrition and physical activity. 'On the Move to Better Health' is a curriculum for fifth graders, which includes education about MyPyramid and aims to increase fruits, vegetables and calcium-rich foods in the diets of children. Based on an initiative of the USDA Food and Nutrition Service, the overall goal of the 'Eat Smart. Play Hard. Together.' project is to increase awareness of the importance of a healthy lifestyle, particularly food choices, regular physical activity and family meals, in maintaining good health among North Dakota youth and their families. The materials developed included pocket folders, parent newsletters, teacher/4-H leader activity guides, posters, bookmarks and billboards. In addition, a 'Healthy North Dakota 4-H Club' recognition program has been implemented to increase awareness and implementation of MyPyramid guidelines at the organization level.

Results

Students improved their knowledge scores and reported positive attitude and behavior changes toward consumption of dairy products. On the pre-survey, 47 percent reported drinking three or more glasses of milk the previous day, compared to 68 percent on the post-survey. On the pre-survey, 17 percent reported drinking soda pop every day, compared to 13 percent on the post-survey. On the pre-survey, 39 percent of children indicated they would choose soda pop over milk if given the choice; on the post-survey 28 percent would choose soda pop over milk if given the choice. About 56 percent of parents reported positive changes in their child's eating habits as a result of this program. In 'On the Move to Better Health' lessons at the end of five weeks, 82 percent reported meeting the goals they set at the beginning of the lesson, 53 percent of children reported increasing the amount of fruits and vegetables they consumed, 63 percent reported drinking more milk, 72 percent reported drinking less soda pop, 67 percent reported drinking more water, and 61 percent increased the amount of physical activity they did. In 4-H youth programming, about 200 youth were recognized in 4-H Clubs for participating in at least six 'healthy activities' based on MyPyramid guidelines.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations

Brief Explanation

New guidelines for nutrition were released, with a phasing out of previous nutrition campaigns (e.g. "5 a day"). This has prompted a revamping of both of the curricula used in these programs. This led to a slight delay in implementing the planned nutrition education programs.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- During (during program)

Evaluation Results

During (during program)

"On the Move to Better Health" and "Banking on Strong Bones" are ongoing evaluated programs. New data gathering surveys have been designed and are being tested.

Results will be reported next year.

Key Items of Evaluation

Items being evaluated are self-reported intake based on MyPyramid guidelines, family meals and number of steps based on pedometer recordings.

Program #12

V(A). Planned Program (Summary)

1. Name of the Planned Program

Livestock Waste Management

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
112	Watershed Protection and Management	25%		0%	
133	Pollution Prevention and Mitigation	25%		0%	
403	Waste Disposal, Recycling, and Reuse	50%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	5.0	0.0	0.0	0.0
Actual	5.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
140000	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
210000	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Develop presentation materials •Develop resource material •Provide presentations and workshops •Translate scientific materials into lay materials
- Identify emerging issues •Evaluate effectiveness of activities

2. Brief description of the target audience

- Owners, managers and employees of animal operations •Agribusiness and agrifinance personnel
- Government agency personnel

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	200	200	0	0
2007	910	500	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2007 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	2	0	2

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

Not reporting on this Output for this Annual Report

Year	Target	Actual
2007	{No Data Entered}	{No Data Entered}

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Number of individuals requesting information
2	Number of individuals demonstrating increase in subject knowledge and skills
3	Number of individuals implementing recommended action or practice
4	Number of individuals requesting assistance
5	Number of nutrient management plans written and people trained
6	Estimated dollar value of adopted best management practices
7	Number of nutrient management plans implemented
8	Surface water quality monitoring data collected in watersheds before and after bmp implementation

Outcome #1**1. Outcome Measures**

Number of individuals requesting information

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	30	40

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Individuals who need to come into compliance with state and federal water quality regulations do not always have the information needed to help them decide what they need to do.

What has been done

The awareness of individuals that are impacted by water quality regulations has been increased through public meetings, media pieces and contacts with other technical agencies concerning the information they can get through the ND Nutrient Management Program.

Results

Producers with the greatest concern for the impact of their livestock operation on the environment contacted the program for more information.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse
133	Pollution Prevention and Mitigation
112	Watershed Protection and Management

Outcome #2**1. Outcome Measures**

Number of individuals demonstrating increase in subject knowledge and skills

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	100	0

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Livestock and crop producers that need to adopt better nutrient management practices must have a better understanding of why and how to achieve this.

What has been done

Group and one-on-one meetings with producers have been conducted to teach them about nutrient management best management practices.

Results

At this time no evaluation has been conducted to determine the increase in knowledge of these participants.

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
403	Waste Disposal, Recycling, and Reuse

Outcome #3**1. Outcome Measures**

Number of individuals implementing recommended action or practice

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	30	38

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Livestock producers who are impacting waters of the state must implement management practices or facility upgrades to minimize environmental impact.

What has been done

Individual consultation with producers was conducted to share with them the options they have for reducing their environmental impact.

Results

Thirty-five individuals obtained an animal feeding operation from the ND Dept Health by installing facility upgrades to control runoff that impacted waters of the state and 3 individuals did not need a permit since they instituted management changes that removed them from consideration for a permit.

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
112	Watershed Protection and Management

Outcome #4**1. Outcome Measures**

Number of individuals requesting assistance

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	50	28

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Livestock producers who may be impacting waters of the state or those who are planning on entering the livestock production industry need assistance with assessing their site for environmental impact.

What has been done

Individual consultation was conducted with producers who made direct contact requesting assistance.

Results

On-site visits were made and information shared with the producers as to the risk of their operation impacting waters of the state.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation

Outcome #5**1. Outcome Measures**

Number of nutrient management plans written and people trained

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	30	30

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Livestock and crop producers who use livestock manure as a fertilizer need to have a nutrient management plan to ensure proper utilization of the manure.

What has been done

Consultants who work with producers to write nutrient management plans attended group trainings to learn about writing nutrient management plans.

Results

NRCS employees and several private consultants can now write nutrient management plans.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse

Outcome #6

1. Outcome Measures

Estimated dollar value of adopted best management practices

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	75000	0

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

It is assumed that producers who utilize manure as fertilizer and upgrade their livestock facilities will have enhanced profitability because of better management.

What has been done

At this point, planning is underway to develop a survey instrument that will be used with producers who have adopted these practices to delineate the economics of those practices.

Results**4. Associated Knowledge Areas**

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse

Outcome #7**1. Outcome Measures**

Number of nutrient management plans implemented

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	30	35

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Livestock producers who need an animal feeding operation permit are required to have a nutrient management plan written and implemented.

What has been done

Thirty-five producers have received an animal feeding operation permit from the ND Dept. of Health that included a nutrient management plan.

Results

At this point, follow-up evaluation with those who have received a permit is being planned to assess if they fully adopted the nutrient management plan.

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
403	Waste Disposal, Recycling, and Reuse

Outcome #8

1. Outcome Measures

Surface water quality monitoring data collected in watersheds before and after bmp implementation

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	2	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

To determine if best management practices that are being adopted are actually effective, monitoring of sub-watershed water quality monitoring must be conducted before and after bmp adoption.

What has been done

Two livestock producers have volunteered to have sub-watershed on their farms intensively monitored for water quality.

Results

At this point, the project is in the initial stages and data on water quality will begin being collected in 2008.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Other (Huge swing in commodity prices)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- During (during program)

Evaluation Results

Key Items of Evaluation

Retrospective (post program)

- a. Producers who have a written nutrient management plan will be evaluated to determine their full, partial, or lack of adoption of the plan

- b. Producers who have adopted bmp's to protect water quality will be evaluated to determine the economic impact of the practices

- c. Producers who have requested individual consultation will be evaluated to determine their increase in knowledge as well as implementation of recommended practices.

During (during program)

- a. Producers and technical advisors who attend educational sessions will be evaluated at each educational event to determine their increase in knowledge.

Program #13

V(A). Planned Program (Summary)

1. Name of the Planned Program

Citizenship and Leadership Development

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
806	Youth Development	100%		0%	
Total		100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	10.0	0.0	0.0	0.0
Actual	5.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
140000	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
210000	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Develop Leadership Training module

Contribution module to include how community service leads to belonging, independence, mastery and generosity

Future modules on youth involvement, diversity, civic engagement and teamwork

2. Brief description of the target audience

4-H youth

4-H youth leaders

4-H adult leaders

County extension staff

Other community organizations, councils and boards

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	200	500	100	500
2007	507	780	209	800

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year Target

Plan: 0

2007 : 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

Not reporting on this Output for this Annual Report

Year	Target	Actual
2007	{No Data Entered}	{No Data Entered}

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Fifty percent of clubs will have someone complete contribution module.
2	Forty percent of clubs will do one or more community service projects.
3	Twenty-five percent of county 4-H leadership will complete leadership modules.
4	One hundred community service projects will be reported.
5	Fifty percent of county 4-H leadership will complete leadership modules.
6	Five percent of county 4-H leadership completing leadership modules will report more civic activism.
7	Fifty percent of clubs will report contributions to their community.
8	Seventy-five percent of county 4-H leadership will complete leadership modules.
9	Twenty-five percent of county 4-H leadership who complete leadership modules will report more civic activism.

Outcome #1**1. Outcome Measures**

Fifty percent of clubs will have someone complete contribution module.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	100	75

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Contribution to communities is important to 4-H clubs/groups. 59 of 67 respondents (88%) identified community service as part of their goals and purpose.

What has been done

Participation in community service provided youth and the adults working with them to identify knowledge of community needs as a valuable part of the contribution effort. 94% of the respondents said they were concerned about local issues.

Results

Comments on 'learning' through contribution highlighted some common themes: 1) the joy of giving, 2) the importance of organizational skills and cooperation, 3) respect for the environment, 4) appreciating the elderly, and 5) empathy for others. 66 of 67 (98%) of respondents said the 4-H clubs could have a positive impact in their community.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #2**1. Outcome Measures**

Forty percent of clubs will do one or more community service projects.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	150	69

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

69 of 79 clubs responding reported one to eight community service projects/activities in the past year.

What has been done

Projects ranged from cleaning and upkeep of community property to visitation and service to the elderly, to providing for those in need in the community.

Results

Several reported respect for others, organizational skills, and compassion and concern for those in need as skills and knowledge they will use in other situations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #3

1. Outcome Measures

Twenty-five percent of county 4-H leadership will complete leadership modules.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	350	200

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

507 adults and 209 youth participated in leadership training and provided leadership to their clubs/groups citizenship activities.

What has been done

With focus on organizational and identifying needs, 63 of 69 respondents agreed they have a good understanding of the needs in their communities.

Results

Training in leadership skills combined with taking responsibility to address needs in the community is demonstrated with community service projects by 75 of the 79 clubs reporting (16% of organized 4-H clubs). Several reported effects of the training and service is the enhancement of organizational skills.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #4

1. Outcome Measures

One hundred community service projects will be reported.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	0	197

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

197 community service activities were reported by 75 leaders of 4-H clubs/groups.

What has been done

Clubs are addressing needs in the community with most clubs showing they do more than one community service projects.

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #5

1. Outcome Measures

Fifty percent of county 4-H leadership will complete leadership modules.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	0	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #6

1. Outcome Measures

Five percent of county 4-H leadership completing leadership modules will report more civic activism.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	0	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #7

1. Outcome Measures

Fifty percent of clubs will report contributions to their community.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	0	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #8

1. Outcome Measures

Seventy-five percent of county 4-H leadership will complete leadership modules.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	0	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #9

1. Outcome Measures

Twenty-five percent of county 4-H leadership who complete leadership modules will report more civic activism.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	0	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
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V(H). Planned Program (External Factors)**External factors which affected outcomes**

- Competing Public priorities
- Populations changes (immigration,new cultural groupings,etc.)

Brief Explanation**V(I). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

- Retrospective (post program)
- During (during program)
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.

Evaluation Results**Key Items of Evaluation**

Program #14

V(A). Planned Program (Summary)

1. Name of the Planned Program

Developing Leadership Systems

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
803	Sociological and Technological Change Affecting Individuals, Families and Communities	50%		0%	
805	Community Institutions, Health, and Social Services	50%		0%	
Total		100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	5.0	0.0	0.0	0.0
Actual	10.3	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
288400	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
432600	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Leadership development activities through two long-term programs offered by the NDSU Extension Service; Rural Leadership North Dakota program and the Horizons project. Rural Leadership North Dakota (RLND) is a two-year interactive study and travel program dedicated to producing graduates with the vision and commitment to lead themselves, their organizations and communities into the future. Horizons is an 18 month, community based program open to all community members. It focuses on practical strategies and tools, provides locally-delivered training and emphasizes skill building to strengthen community leadership systems.

2. Brief description of the target audience

Youth, school personnel and administration, elected officials, community collaborators, Association of Counties, service groups, Governor's office, Chamber personnel, economic developers, higher education personnel, State Board of Agriculture Research and Education, Soil Conservation Districts, League of Cities.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	1200	1700	650	850
2007	1542	0	171	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2007 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	1	0	1

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

Not reporting on this Output for this Annual Report

Year	Target	Actual
2007	{No Data Entered}	{No Data Entered}

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Number of community members who display leadership skills sets
2	Number of community members who understand how they can be involved in leadership roles
3	Number of people from diverse backgrounds involved
4	Number of community projects being accomplished and reported on
5	Percent increase in non-traditional leaders including youth
6	Number of individuals available in communities for leadership on community organizations
7	Number of community organizations with youth on boards

Outcome #1**1. Outcome Measures**

Number of community members who display leadership skills sets

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	1200	1032

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Community leadership is as important as good roads, great schools and clean water. Leadership is required in communities to make sure things run smoothly and make them a better place to live, work and raise families. Strengthening leadership in communities is critical and the NDSU Extension Service has two long-term programs to assist in this leadership development for North Dakotans; Horizons and Rural Leadership North Dakota. We also provide short-term leadership development programming throughout the year.

What has been done

Horizons - Twenty-one communities participated in the Horizons program that works to develop local leaders to address difficult local issues such as poverty and demographic decline. Each community involved in the program was required to have at least 25 individuals go through a Leadership Plenty curriculum; a nine module program covering leadership skills and issues including communication, conflict resolution, partnering and making meetings work.

RLND - Rural Leadership North Dakota is a two year interactive study and travel program dedicated to producing graduates with the vision and commitment to lead themselves, their organizations and communities into the future. During October 2006-2007, participants attended five, three-day seminars across North Dakota.

Short term -these programs included ethical leadership, servant leadership, and youth leadership programs throughout the state as requested by groups and organizations.

Results

Horizons - A total of 622 North Dakotans participated in portions of the Leadership Plenty training. Pre and post survey results indicate a statistically significant change in knowledge and behaviors of participants around issues related to leadership skills.

RLND - Leadership skills and knowledge among RLND participants increased 33%. Rural Leadership participants now report, 'Much more confidence in my leading and strategic thinking skills' RLND participant. 'Move forward with what I have experience and see some new projects come forth. I will continue to seek involvement in the community and definitely listen more closely.' RLND participant.

Participants in the Rural Leadership North Dakota Program (RLND) also used their leadership skills to complete a project in their community or organization.

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families and Communities

Outcome #2**1. Outcome Measures**

Number of community members who understand how they can be involved in leadership roles

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	1200	1542

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Participants in both the Horizons and Rural Leadership North Dakota programs do not always understand how they can be involved in leadership roles to begin with, but as the programs unfold, this is revealed as part of the planned curriculum.

What has been done

Horizons - Twenty-one communities participated in the Horizons program that works to develop local leaders to address difficult local issues such as poverty and demographic decline. Each community involved in the program was required to have at least 25 individuals go through a Leadership Plenty curriculum; a nine module program covering leadership skills and issues including communication, conflict resolution, partnering and making meetings work.

RLND - Rural Leadership North Dakota is a two year interactive study and travel program dedicated to producing graduates with the vision and commitment to lead themselves, their organizations and communities into the future. During October 2006-2007, participants attended five, three-day seminars across North Dakota.

Results

Horizons - Participants in the Horizons program were asked on a pre- and post- survey involving the Leadership Plenty curriculum about their involvement in communities. A total of 622 North Dakotans participated in this program with 522 actually completing both the pre and post surveys. Within this survey two questions specifically addressed the participant's understanding of how they could be involved in leadership roles and included; (1) I recognize the relationship between getting involved and civic leadership (pre - 3.6, post - 4.3 on a 1-5 Likert scale) and (2) I am able to work with the leadership in my organization and/or greater community (pre-3.7, post 4.2 on a 1-5 Likert scale).

In a qualitative panel study of the Horizons program, one panelist stated, 'These are the things, to me, that came of the Study Circles and the Leadership Plenty training. We have a community group... it's called the Area Development Club... It encompasses the whole community. The election of officers was Monday night and we had people actually volunteering for the offices.'

RLND - Rural Leadership North Dakota participants indicated, 'I have used this information to change my way of thinking' (RLND participant quote following RLND program). 'To better my relationships' (RLND participant quote following RLND program).

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families and Communities

Outcome #3**1. Outcome Measures**

Number of people from diverse backgrounds involved

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	22	36

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

While North Dakota is made up of a relatively large Caucasian population, both the Horizons program and the RLND program strive to be inclusive of all ethnicities in their work. In order to develop effective leaders to address issues in rural North Dakota communities, people of all ages, ethnicities and both genders need to be involved. For this outcome, we looked only at ethnicity.

What has been done

Horizons - Twenty-one communities participated in the Horizons program that works to develop local leaders to address difficult local issues such as poverty and demographic decline. Each community involved in the program was required to have at least 25 individuals go through a Leadership Plenty curriculum; a nine module program covering leadership skills and issues including communication, conflict resolution, partnering and making meetings work. Communities were instructed as to how to recruit individuals from all demographics of their community in order to get a cross-section that would look like their community did.

RLND - Rural Leadership North Dakota is a two year interactive study and travel program dedicated to producing graduates with the vision and commitment to lead themselves, their organizations and communities into the future. RLND attempts to recruit individuals from all ethnicities during each recruitment period.

Other programs - During Governor's School and League of Cities leadership presentations done by NDSU State Specialist, individuals from various ethnic backgrounds participated in the educational workshops.

Results

In the Horizons program the Leadership Plenty pre survey asked for demographic information. Over 96% of the 622 individuals involved were white, 3.5% were Native American and .06% were Latino/Hispanic.

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families and Communities

Outcome #4**1. Outcome Measures**

Number of community projects being accomplished and reported on

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	35	38

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Community projects offer participants an opportunity to showcase their new leadership skills and provide a small 'win' to further their efforts on other projects.

What has been done

Both the Horizons project and the RLND program require community projects to be completed. Various resources are available to help complete these projects and get multiple individuals involved.

Results

Horizons - Some of the community projects completed through Horizons include: (1) a Farmer's Market started to assist local produce growers with a market for products and opportunity to promote their community, (2) a grant received for \$41,000 to assist in the development of a river trail, (3) High speed Internet access set up at local library for residents to utilize at no cost, (4) a walking trail built to ensure healthy activities for residents.

RLND - A RLND summary booklet was prepared that describes the 17 RLND community projects. The booklet is located at: www.ag.ndsu.edu/rind/RLND_Class_Summary_2007.pdf

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families and Communities

Outcome #5**1. Outcome Measures**

Percent increase in non-traditional leaders including youth

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	10	171

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Youth leadership and involvement is critical to the state's future. Without the next generation stepping up to leadership roles, communities will face a void in leadership to tackle difficult issues and projects.

What has been done

Horizons - Youth were recruited to be involved in Study Circles and Leadership Plenty within the Horizons program. They participated as equal partners in these processes through discussion and in some cases led a small group. Youth have been involved in community projects in partnership with adults following these Horizon activities.

Other leadership programs - Leadership Development training was done with with ND 4-H Ambassador Candidates as well as youth involved in North Dakota Governor's school.

Results

As North Dakota 4-H Ambassador Candidates interviewed for the positions, two of them actually reported on being involved in their community study circles process and having a voice in the future of their town. During Study Circles, a part of the Horizons program, out of 101 youth involved, eight led study circles dialogue over the six meeting format.

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families and Communities

Outcome #6

1. Outcome Measures

Number of individuals available in communities for leadership on community organizations

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	1250	839

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

When ample leaders are available in communities for leadership, organizational and community work goes much more smoothly.

What has been done

Horizons - Twenty-one communities participated in the Horizons program that works to develop local leaders to address difficult local issues such as poverty and demographic decline. Each community involved in the program was required to have at least 25 individuals go through a Leadership Plenty curriculum; a nine module program covering leadership skills and issues including communication, conflict resolution, partnering and making meetings work.

RLND - Rural Leadership North Dakota is a two year interactive study and travel program dedicated to producing graduates with the vision and commitment to lead themselves, their organizations and communities into the future. During October 2006-2007, participants attended five, three-day seminars across North Dakota. To prepare and develop leaders to strengthen rural communities is the RLND mission which encourages others to become more involved.

Other - Fair board training, servant Leadership training and ethical leadership training all involve empowering participants to become more engaged in their communities and local organizations.

Results

Horizons - Participants in the Horizons program were asked on a pre- and post- survey involving the Leadership Plenty curriculum about their involvement in communities. A total of 622 North Dakotans participated in this program with 522 actually completing both the pre and post surveys. Within this survey two questions specifically addressed the participant's understanding of how they could be involved in leadership roles and included; (1) I recognize the relationship between getting involved and civic leadership (pre - 3.6, post - 4.3 on a 1-5 Likert scale) and (2) I am able to work with the leadership in my organization and/or greater community (pre-3.7, post 4.2 on a 1-5 Likert scale).

In a qualitative panel study of the Horizons program, one panelist stated, 'These are the things, to me, that came of the Study Circles and the Leadership Plenty training. We have a community group... it's called the Area Development Club... It encompasses the whole community. The election of officers was Monday night and we had people actually volunteering for the offices.'

RLND - Rural Leadership North Dakota participants indicated, 'I have used this information to change my way of thinking' (RLND participant quote following RLND program). 'To better my relationships' (RLND participant quote following RLND program).

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families and Communities

Outcome #7

1. Outcome Measures

Number of community organizations with youth on boards

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	25	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families and Communities

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Government Regulations
- Competing Public priorities
- Populations changes (immigration,new cultural groupings,etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- During (during program)
- Comparisons between program participants (individuals,group,organizations) and non-participants

Evaluation Results

Key Items of Evaluation

Program #15

V(A). Planned Program (Summary)

1. Name of the Planned Program

Financial Security for All

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
801	Individual and Family Resource Management	100%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	0.0	0.0
Actual	2.5	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
71400	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
107100	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Promote Interactive learning modules
- Packaged programs
- NDSU Extension Service Family Economics Web site
- Media work
- Collaborative projects

2. Brief description of the target audience

- Extension educators
- Specialists
- General public
- Targeted audiences - Baby Boomers, women, couples, farm/ranch
- Families - older adults
- Collaborators
- Youth
- Financially vulnerable

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	2500	100000	2000	8000
2007	3700	300000	1400	180000

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2007 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	4	2	6

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

Not reporting on this Output for this Annual Report

Year	Target	Actual
2007	{No Data Entered}	{No Data Entered}

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Number of educational programs and activities conducted
2	Number of people completing educational programs
3	Number of people reporting increased knowledge from the number completing educational programs
4	Number of people who plan to adopt practices from the number of people who increased knowledge
5	Number of people adopting practices from the number of people who increased knowledge
6	Number of people receiving information through non-program contacts such as telephone, office and farm visits
7	Number of people who engage in activities that increase their financial literacy related to later life issues
8	Number of people who initiate or increase contributions to a savings plan for retirement or future income needs or participate in America Saves program
9	Number of people who participate in the Legally Secure Your Financial Future program
10	Number of people who participate in the Investing for Your Future program
11	Number of people who participate in programs to cope with financial impacts of reduced income
12	Number of participants reporting reduced anxiety related to financial problems
13	Number of participants reporting increased savings
14	Amount of increased savings
15	Number of participants reporting decreased debt
16	Amount of decreased debt
17	Decreased numbers of personal bankruptcy filings in state of North Dakota

Outcome #1**1. Outcome Measures**

Number of educational programs and activities conducted

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	200	185

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

A funeral is one of the most expensive purchases a consumer will ever make. A traditional funeral, including a casket & vault costs about \$6,000-8,000. Extras like flowers, obituary notices, acknowledgment cards, plot marker, etc. can add thousands of additional dollars, so that many funerals today run over \$10,000. Pre planning can save not only money, but reduce the stress on family members.

What has been done

Packaged program taught to educators and shared with community groups.

Results

Final Wishes anecdote: 'I just wanted to let you know that I visited with the local funeral director recently and he told me that 13 people have come in to plan their funeral since the 3 'Final Wishes' lessons. He feels that people are more willing to talk about the funeral since the lesson. He was very pleased with the results.'

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #2**1. Outcome Measures**

Number of people completing educational programs

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	2000	1780

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)****What has been done**

Results**4. Associated Knowledge Areas**

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #3**1. Outcome Measures**

Number of people reporting increased knowledge from the number completing educational programs

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	1800	752

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)****What has been done**

Dollar Works Training
Annie's Project

Results

Annie's Project participants reported increased confidence to discuss farming issues with spouse and increased marketing skills.

DollarWorks Participant: 'I realize that I can do this, taking one step at a time. I find out that I am not alone in this process, others are in the same boat. Thank you for giving me some resources to be better of financially!'

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #4**1. Outcome Measures**

Number of people who plan to adopt practices from the number of people who increased knowledge

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	1500	281

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Farm women are important parts of the family operation, but often lack the skills and confidence necessary for farm business management.

What has been done

Annie's Project

Results

'Annie's Project has given me increased confidence to discuss farming issues with spouse. Increase marketing skills.'

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #5**1. Outcome Measures**

Number of people adopting practices from the number of people who increased knowledge

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	500	6

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)****What has been done****Results****4. Associated Knowledge Areas**

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #6

1. Outcome Measures

Number of people receiving information through non-program contacts such as telephone, office and farm visits

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	1200	2760

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #7

1. Outcome Measures

Number of people who engage in activities that increase their financial literacy related to later life issues

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	2000	125

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
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Outcome #8**1. Outcome Measures**

Number of people who initiate or increase contributions to a savings plan for retirement or future income needs or participate in America Saves program

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	400	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #9**1. Outcome Measures**

Number of people who participate in the Legally Secure Your Financial Future program

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	50	89

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #10

1. Outcome Measures

Number of people who participate in the Investing for Your Future program

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	10	33

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #11

1. Outcome Measures

Number of people who participate in programs to cope with financial impacts of reduced income

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	300	43

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results**4. Associated Knowledge Areas**

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #12**1. Outcome Measures**

Number of participants reporting reduced anxiety related to financial problems

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	500	44

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Annie's Project

Results

'We're coming out of debt and the tools provided(in this class)will help immensely. I learned that knowing my financial past aides in determining my financial future.'

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #13**1. Outcome Measures**

Number of participants reporting increased savings

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	1000	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)**What has been done****Results****4. Associated Knowledge Areas**

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #14**1. Outcome Measures**

Amount of increased savings

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	120000	0

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)****What has been done****Results****4. Associated Knowledge Areas**

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #15**1. Outcome Measures**

Number of participants reporting decreased debt

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	500	40

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #16

1. Outcome Measures

Amount of decreased debt

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	10000	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #17

1. Outcome Measures

Decreased numbers of personal bankruptcy filings in state of North Dakota

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	50	1089

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

Due to changes in Bankruptcy Laws, there was a significant drop in Bankruptcy filings nationwide between FY 06 and FY 07.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Competing Public priorities

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- During (during program)
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.

Evaluation Results

Key Items of Evaluation

Program #16

V(A). Planned Program (Summary)

1. Name of the Planned Program

Noxious and Invasive Weed Management

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
213	Weeds Affecting Plants	20%		0%	
215	Biological Control of Pests Affecting Plants	40%		0%	
216	Integrated Pest Management Systems	40%		0%	
Total		100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	4.0	0.0	0.0	0.0
Actual	4.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
112000	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
168000	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

•Develop presentation materials •Develop resource material •Provide workshops and field tours •Translate scientific materials into lay materials •Develop demonstration and research trials •Evaluate effectiveness of activities

2. Brief description of the target audience

•Private land managers, including livestock producers •Public land managers •4-H youth •Government agency personnel •Conservation groups

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	200	2000	0	0
2007	377	1570	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2007 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	1	0	1

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

Not reporting on this Output for this Annual Report

Year	Target	Actual
2007	{No Data Entered}	{No Data Entered}

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Number of individuals receiving training and education
2	Number of individuals demonstrating increase in subject knowledge and skills
3	Number of producers implementing recommended actions or practices
4	Number of producers participating in government cost share programs for range conservation
5	Estimated cost savings and return for North Dakota landowners implementing an integrated pest management program (\$/acre)
6	Reduce number of noxious weed acres by two to five percent annually in North Dakota

Outcome #1**1. Outcome Measures**

Number of individuals receiving training and education

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	200	377

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Noxious and invasive weeds have a direct economic and ecological impact on range and pastureland. These weeds reduced forage production, thus livestock production potential, resulting in an economic drain to the livestock sector. Ecologically, noxious and invasive weeds reduce the integrity of the natural resource, reducing the soil and plant community value for health, esthetics, and wildlife habitat.

What has been done

We developed training sessions and workshops for livestock producers and land managers to enhance the knowledge of the management and plant identification. A total of 10 educational opportunities were developed and conducted, as well as four popular press interviews or news stories.

Results

We achieved a direct impact on 377 individuals and indirect impact on almost 16,000 individuals. We felt we had a direct impact on 13,350 acres.

4. Associated Knowledge Areas

KA Code	Knowledge Area
213	Weeds Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

Outcome #2**1. Outcome Measures**

Number of individuals demonstrating increase in subject knowledge and skills

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	100	97

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Noxious and invasive weeds have a direct economic and ecological impact on range and pastureland. These weeds reduced forage production, thus livestock production potential, resulting in an economic drain to the livestock sector. Ecologically, noxious and invasive weeds reduce the integrity of the natural resource, reducing the soil and plant community value for health, esthetics, and wildlife habitat.

What has been done

Two and three day intensive training sessions were conducted to provide intensive training to livestock producers and private/public land managers. Four workshops were conducted with 97 participants.

Results

These four workshops had a direct impact on 11,300 acres and an indirect impact on as much as 200,000 acres.

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems
213	Weeds Affecting Plants
215	Biological Control of Pests Affecting Plants

Outcome #3

1. Outcome Measures

Number of producers implementing recommended actions or practices

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	20	35

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Noxious and invasive weeds have a direct economic and ecological impact on range and pastureland. These weeds reduced forage production, thus livestock production potential, resulting in an economic drain to the livestock sector.

What has been done

Two one-on-one workshops were conducted to land managers. One was a three-day workshop and one a single day workshop.

Results

We impacted 35 individuals who incorporated weed control practices on an estimated 10,800 acres.

4. Associated Knowledge Areas

KA Code	Knowledge Area
215	Biological Control of Pests Affecting Plants
213	Weeds Affecting Plants
216	Integrated Pest Management Systems

Outcome #4

1. Outcome Measures

Number of producers participating in government cost share programs for range conservation

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	50	32

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Numerous federal and state government agencies have provided incentives through government cost-sharing programs. Livestock producers are interesting in learning and using these incentive programs and matching dollars to improve their range management practices and livestock production per given land base.

What has been done

Sixteen educational programs were conducted in collaboration with the Natural Resources Conservation Service and North Dakota State University Extension Service for private land managers.

Results

Over 600 livestock producers participated in these workshops and training sessions, with over 30 landowners known to have participated and incorporate cost-sharing programs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems
215	Biological Control of Pests Affecting Plants
213	Weeds Affecting Plants

Outcome #5**1. Outcome Measures**

Estimated cost savings and return for North Dakota landowners implementing an integrated pest management program (\$/acre)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	5	3

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Noxious and invasive weeds have a direct economic impact on range and pastureland. These weeds reduced forage production, thus livestock production potential, resulting in an economic drain to the livestock sector. The average cost for controlling weeds is approximately \$12/ac using traditional techniques, thus creating a cost return at and above these costs of a minimum of \$3.

What has been done

We developed training sessions and workshops for livestock producers and land managers to enhance the knowledge of the management and plant identification. A total of 10 educational opportunities were developed and conducted, as well as four popular press interviews or news stories.

Results

We provided options for controlling and managing noxious and invasive weeds that provided a net gain in return from the livestock sector above the input costs of a minimum of \$3 and as great as \$20.

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems
213	Weeds Affecting Plants
215	Biological Control of Pests Affecting Plants

Outcome #6

1. Outcome Measures

Reduce number of noxious weed acres by two to five percent annually in North Dakota

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	2	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Noxious and invasive weeds have a direct economic and ecological impact on range and pastureland. These weeds reduced forage production, thus livestock production potential, resulting in an economic drain to the livestock sector. Ecologically, noxious and invasive weeds reduce the integrity of the natural resource, reducing the soil and plant community value for health, esthetics, and wildlife habitat.

What has been done

We developed training sessions and workshops for livestock producers and land managers to enhance the knowledge of the management and plant identification. A total of 10 educational opportunities were developed and conducted, as well as four popular press interviews or news stories. We also developed a colored pictorial publication for weed identification and management options, distributing almost 10,000 copies state wide in North Dakota.

Results

Surveys by the North Dakota Agriculture Department show a continued reduction of noxious weeds by at least 2%, and as much as 4%.

4. Associated Knowledge Areas

KA Code	Knowledge Area
215	Biological Control of Pests Affecting Plants
213	Weeds Affecting Plants
216	Integrated Pest Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought,weather extremes,etc.)
- Economy
- Government Regulations
- Competing Public priorities

Brief Explanation

V(l). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- During (during program)

Evaluation Results

Key Items of Evaluation

Program #17

V(A). Planned Program (Summary)

1. Name of the Planned Program

Fusarium head blight of wheat

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
212	Pathogens and Nematodes Affecting Plants	100%		100%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	2.0	0.0
Actual	1.5	0.0	2.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
42000	0	68000	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
63000	0	100000	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

•Research on fungicidal- and bio-control and application technology •Field surveys on disease severity and losses to disease
 •Develop resource material •Provide presentations and workshops •Translate scientific materials into lay materials

2. Brief description of the target audience

•Wheat producers •Crop consultants and ag advisors •Research Extension Centers •Extension personnel
 •Agribusiness and agrifinance personnel •Government agency personnel

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	500	1000	0	0
2007	6000	15000	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	2
2007 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	2	2	4

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

Not reporting on this Output for this Annual Report

Year	Target	Actual
2007	{No Data Entered}	{No Data Entered}

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Percent of acres planted to resistant varieties
2	Percent of acres treated with fungicides
3	Economic losses to disease (\$)
4	Number of individuals demonstrating increased knowledge and skills
5	Number of individuals implementing recommended action or practice
6	Economic losses to Fusarium head blight (\$)
7	Estimated dollar value of adopted best management practices (\$)
8	Stable export market unaffected by quality issues (\$)

Outcome #1**1. Outcome Measures**

Percent of acres planted to resistant varieties

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	40	43

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

ND wheat and barley producers care because resistant varieties reduce yield and quality losses to FHB.

What has been done

Recommendations made via four wheat schools, one hard red spring wheat show, various news releases, and assorted Extension publications including Crop and Pest Reports.

Results

Producers increased acreage of resistant wheat varieties, including Glenn wheat, which was the most widely-grown variety in the state.

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants

Outcome #2**1. Outcome Measures**

Percent of acres treated with fungicides

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	17	13

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

ND wheat and barley producers care because timely application of fungicides may reduce yield and quality losses to FHB.

What has been done

Experiments performed to show efficacy of fungicide applications for reducing disease severity, yield losses, and quality losses. Results of experiments and recommendations presented at four wheat schools, one hard red spring wheat show and through various news releases and assorted Extension publications, including Crop and Pest Reports.

Results

Fungicides applied to approximately 1 million acres. Depending on variety treated, yield increased 20-30%, DON decreased up to 50%, and severity decreased approximately 20-60%.

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants

Outcome #3

1. Outcome Measures

Economic losses to disease (\$)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	150000000	30000000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

North Dakota wheat and barley producers care because disease reduces economic value of their crop produced.

What has been done

Recommendations made to plant resistant varieties and, if conditions warranted, for timely application of fungicides.

Results

Economic losses were reduced through use of better varieties and through use of fungicides.

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants

Outcome #4

1. Outcome Measures

Number of individuals demonstrating increased knowledge and skills

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	10000	8000

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

North Dakota wheat and barley producers care because increased knowledge and skills may increase farm profitability by reducing impact of disease.

What has been done

Educational materials and recommendations presented at four wheat schools, one hard red spring wheat show and through various news releases and assorted Extension publications, including Crop and Pest Reports.

Results

Thousands of people received information. Producers demonstrated more knowledge by planting more resistant varieties and through timely application of fungicides.

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants

Outcome #5**1. Outcome Measures**

Number of individuals implementing recommended action or practice

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	10000	8000

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

North Dakota wheat and barley producers care because implementing recommended actions and practices may increase farm profitability by reducing impact of disease.

What has been done

Recommendations made at wheat schools and shows. Surveys taken to ask producers what their plans were for the growing season and for what they learned.

Results

Producers increased acreage of better varieties and made better applications of fungicides.

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants

Outcome #6**1. Outcome Measures**

Economic losses to Fusarium head blight (\$)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	150000000	30000000

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

North Dakota wheat and barley producers care because disease reduces economic value of their crop produced.

What has been done

Recommendations made to plant resistant varieties and, if conditions warranted, for timely application of fungicides.

Results

Economic losses were reduced through use of better varieties and through use of fungicides.

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants

Outcome #7**1. Outcome Measures**

Estimated dollar value of adopted best management practices (\$)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	50000000	40000000

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

North Dakota wheat and barley producers care because disease reduces economic value of their crop produced.

What has been done

Gave recommendations to plant resistant varieties and, if conditions warranted, for timely application of fungicides.

Results

Economic losses were reduced through use of better varieties (approximately \$20 million increase in wheat value statewide) and through use of fungicides (also approximately \$20 million statewide).

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants

Outcome #8

1. Outcome Measures

Stable export market unaffected by quality issues (\$)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	500000000	800000000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

North Dakota wheat and barley producers care because export market increases value of crop and gives producers place to sell their commodity.

What has been done

Recommendations made to plant resistant varieties and, if conditions warranted, for timely application of fungicides.

Results

Quality of wheat produced was better by planting better varieties and through use of fungicides. Approximately 400 million bushels produced, half (200 million bushels) for export market.

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- During (during program)

Evaluation Results

Key Items of Evaluation

Program #18

V(A). Planned Program (Summary)

1. Name of the Planned Program

Family Meals

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
802	Human Development and Family Well-Being	100%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	0.0	0.0
Actual	3.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
84000	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
126000	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Develop newsletter resources on family meals

Develop presentation and resource materials

Provide training through presentations and workshops

Identify key and emerging issues

Evaluate effectiveness of activities

2. Brief description of the target audience

Parents and family caregivers

4-H youth and other youth

Child care programs, caregivers

School system personnel

Government agency personnel

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	1200	2500	600	1000
2007	350	1000	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year Target

Plan: 0

2007 : 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

Not reporting on this Output for this Annual Report

Year	Target	Actual
2007	{No Data Entered}	{No Data Entered}

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Percent of participating individuals demonstrating increase in subject knowledge and skills
2	Percent of individuals implementing recommended actions or practices
3	Percent of individuals indicating a change in frequency of family meals
4	Percent of individuals indicating a change in other quality indicators of the family meal experience
5	Percent of individuals showing an improvement in measures of family connection and well-being
6	Percent of individuals showing an improvement in family nutritional wellness
7	Number of individuals receiving information through materials or training

Outcome #1**1. Outcome Measures**

Percent of participating individuals demonstrating increase in subject knowledge and skills

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	60	92

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Parents and other adults need increased knowledge on key issues related to family meals.

What has been done

An educational lesson was developed on the value and importance of family meals. The educational lesson was delivered throughout the state to parents and other adults by extension staff.

Results

Ninety-two percent of participants in the educational program indicated they had learned something new on key issues related to family meals.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #2**1. Outcome Measures**

Percent of individuals implementing recommended actions or practices

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	50	91

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Parents and other adults need to take increased steps related to healthy practices regarding family meals.

What has been done

An educational lesson was developed on the value and importance of family meals. The educational lesson was delivered throughout the state to parents and other adults by extension staff.

Results

Ninety-one percent of participants in the educational program indicated they were implementing specific steps related to healthy practices and family meals.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #3**1. Outcome Measures**

Percent of individuals indicating a change in frequency of family meals

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	0	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #4**1. Outcome Measures**

Percent of individuals indicating a change in other quality indicators of the family meal experience

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	0	93

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Parents and other adults need to develop new ideas and skills regarding family meal practices in the home.

What has been done

An educational lesson was developed on the value and importance of family meals. The educational lesson was delivered throughout the state to parents and other adults by extension staff.

Results

Ninety-three percent of participants in the educational program indicated they were developing new ideas and skills regarding family meal practices in the home.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #5

1. Outcome Measures

Percent of individuals showing an improvement in measures of family connection and well-being

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	0	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #6

1. Outcome Measures

Percent of individuals showing an improvement in family nutritional wellness

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	0	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #7

1. Outcome Measures

Number of individuals receiving information through materials or training

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2007	5500	1350

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Parents, caregivers, youth and other citizens need increased information and understanding about the benefits of family meals and practices to promote family meals.

What has been done

An educational lesson was developed on the value and importance of family meals. The educational lesson was delivered throughout the state to parents and other adults by extension staff. Also, a series of six educational newsletters on family meals was developed and distribution was begun to different groups within the community.

Results

Awareness of the importance of family meals is increasing and participants in educational programs indicate positive responses to the content and materials.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Populations changes (immigration,new cultural groupings,etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- During (during program)
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.

Evaluation Results

Key Items of Evaluation